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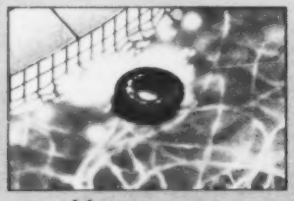

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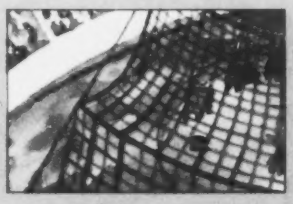

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Probing the Depth of Mortgage Pools

Kenneth R. Scott
James E. Monsma

Using Federal Housing Administration (FHA) mortgate mortality experience to evaluate Government National Mortgage Association (GNMA) Mortgage-Backed Securities (MBSs) is now the most widely accepted and applied method. That this method is reasonably accurate for evaluating 30-year GNMA pools is unquestioned. But what about FNMA and Federal Home Loan Mortgage Corporation (FHLMC) pools? Or the new 15-year pools and private mortgage pools? The FHA experience method has some inherent limitations that make it unsuitable for evaluating these other types of pools.

Perhaps the most important limitation is the FHA statistics themselves. All the mortgages are 30-year FHA or Veterans Administration (VA) mortgages, whereas Federal National Mortgage Association (FNMA) and FHLMC pools are predominantly conventional mortgages. The prepayment pattern inherent in FHA mortgages does not necessarily apply to other types of mortgages. FHA mortgages are assumable—conventional mortgages may not be. FHA mortgages are subject to maximum amount limitations—conventional mortgages are not.

Now there is a new method of pool evaluation that is superior to anything else currently available. The new method, called Constant Percent Prepayment (CPP), is similar to proprietary methods used by a number of financial institutions.

Here is a simple overview of the method:

Imagine a pool of $1,000,000 of nonamortizing mortgages bearing interest at the rate of 12 percent. In the absence of any prepayment, the mortgage holder would receive interest at the rate of 1 percent per month or $10,000.

continued

There are many ways that prepayment might occur. Let us examine one possible example. Suppose 10 percent of the pool prepaid in the first month, 5 percent of the remaining pool prepaid in the second month, and 3 percent of the pool prepaid in the third month.

The first observation is that the pool, in this case, prepaid at an annual prepayment percent of 120 percent (10 percent × 12) in the first month, an annual prepayment percent of 60 percent (5 percent × 12) in the second month, and an annual prepayment percent of 36 percent (3 percent × 12) in the third month.

The second observation is that the unpaid pool balance at the end of the first month is $900,000 ($1,000,000 × [1.00 − 0.10]). Similarly, the balance at the end of month two is $855,000 ($900,000 × [1.00 − 0.05]) and the balance at the end of month three is $829,350 ($855,000 × [1.00 − 03]). Thus, over this three-month period, the outstanding pool balance has declined from $1,000,000 to $829,350. This is the same as if approximately 6.047 percent of the pool had prepaid each month. The CPP is 6.047 percent × 12 or 72.56 percent.

The third pertinent observation is that the monthly cashflow for the varying percent prepayment example is not the same as the cashflow from the 72.56 percent CPP situation; only the unpaid balance is the same. Not only that, but the unpaid pool balance is the same regardless of the order in which the 10 percent, 5 percent, and 3 percent prepayments occur; the cashflows vary greatly.

Applying this CPP methodology to amortizing mortgage pools is more difficult than the simple non-amortizing case, but the principles remain. The remaining pool balance is a function of both amortization and prepayment.

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James E. Monsma is vice president of Financial Publishing Company, responsible for corporate data processing and technical analysis. Prior to joining the company in 1980, he was a consultant in New York and a program manager with IBM specializing in helping customers apply computers to technical and business problems.

But given an original pool balance, original term, the interest rate, and the balance at a later point in time, a CPP rate can be derived.

When this methodology is applied to a mortgage pool or GNMA pool, the CPP is internally derived. That is, the CPP is derived from the particular pool's actual experience between two points in time. This is an entirely different approach from that using FHA experience, where prepayment is assumed to follow a pattern, but the pattern can be scaled "up" or "down." The CPP is a different way of looking at a pool, and the CPP may be a better forecast of the future.

Furthermore, if one selects a CPP rate, and if one anticipates that a pool will prepay at this rate in the future, a fair market price can be derived from the desired yield, and vice versa.

The CPP method must be looked at from an historical perspective and contrasted to earlier methods of pricing mortgage pools. In doing so, it is particularly interesting to study the data presented here in Figure 10 giving the CPP values that are equivalent to various FHA experience percentages.

Over the past few years, four different prepayment models have been used to help get an accurate picture of the expected yield or price of a security. In this article, we have gathered these together and have demonstrated the implications of the assumptions in a consistent way.

First, we were curious as to what the model produced as the remaining balance of the security for each period. Second, we wanted to know its implications with respect to the amount of the remaining balance that was assumed prepaid each period. Finally, we wanted to know what cashflow each model assumed for the investor.

Mortgage model 1—no prepayment

This model assumes that a borrower makes each regularly scheduled mortgage payment on time and that the payment stream runs to its scheduled maturity. This mortgage payment model is used mostly for short-term mortgages, for mortgages where prepayment is precluded or penalized, or for some commercial mortgages where payment is disadvantageous (e.g., below current interest rates) or unlikely (e.g., a loan to a cooperative where the collective action of a great many subborrowers would be necessary).

continued

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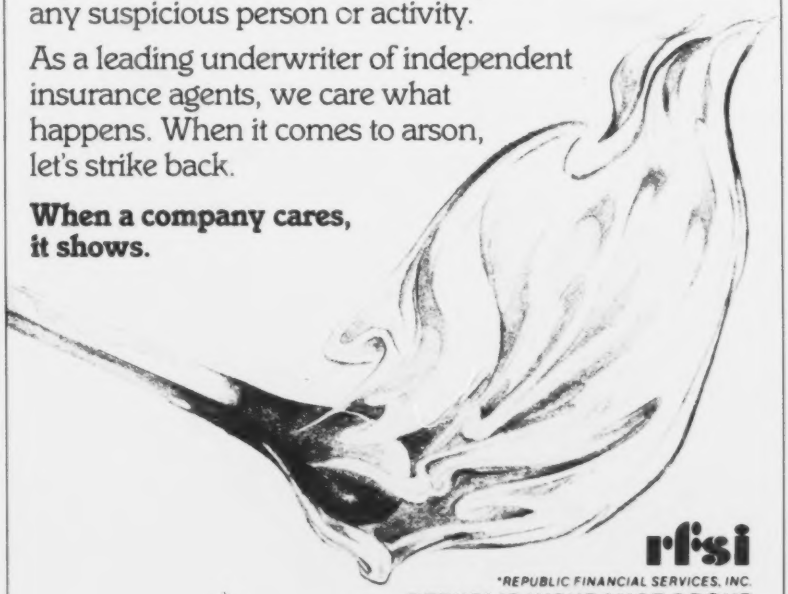

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Figure 1 shows the remaining balance as a percent of the original balance over the 30-year life of the security. Each month the amount of the payment not required for interest was subtracted from the balance. The result is a convex curve that naturally reaches zero at the 30-year mark. (Note: The computations used to derive Figures 1–8 were done on an annual basis, whereas the remaining computations were done on a monthly basis.)

Because there are no prepayments, we have not bothered to plot a curve of the ratio of prepayment to remaining balance. Such a curve will be of interest, however, when we look at other models.

Figure 2 shows a plot of the cashflow that the model predicts the investor will receive. It is only one of a series of payments, because the exact curve depends on the yield that is used to discount the real cashflow values over time. This plot shows the curve that results when the cashflow is discounted at 10 percent per year. The number on the vertical scale (79.671) is the sum of all discounted cashflow values and thus the price of the security.

Mortgage model 2— no prepayment for a period of time; then prepayment in full

This model is the one in most common use for buying and selling single mortgages. It assumes that a borrower will make each regularly scheduled payment for a period of time and then prepay the mortgage in full. For example, the usual assumption for a 30-year single-family loan is that it will make all scheduled payments for 12 years (144 months) and then prepay in full.

Clearly, this is a realistic model to use for individual loans. Typical behavior by a mortgage holder is to make payments until the property is disposed of and then to pay off the loan. The model allows the use of a parameter that is the number of years the mortgage is held. It represents the average time that a mortgage is expected to be held and is the best choice in the ab-

Figure 1:
Plot of the Remaining Balance of an 8% Security

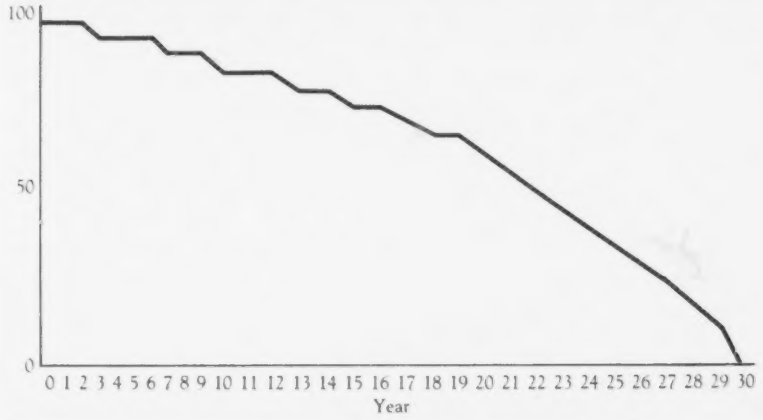

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Figure 2:
Plot of the Cashflow to the Investor Discounted at 10%

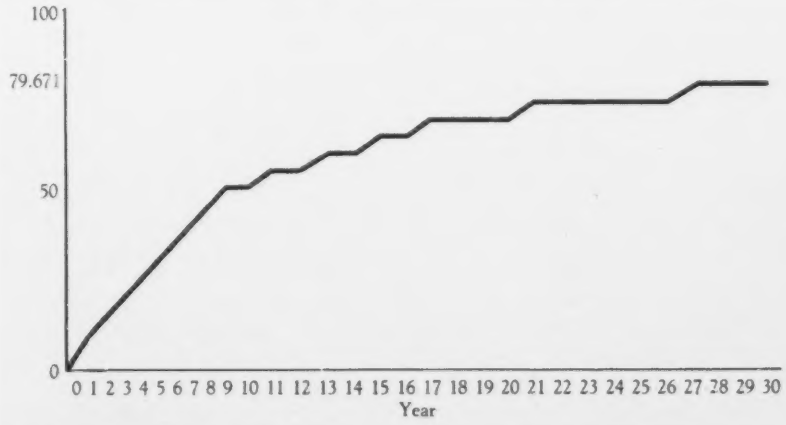


Figure 3:
Plot of the Cashflow to Investors Discounted at 10% with Prepayment at Year 12

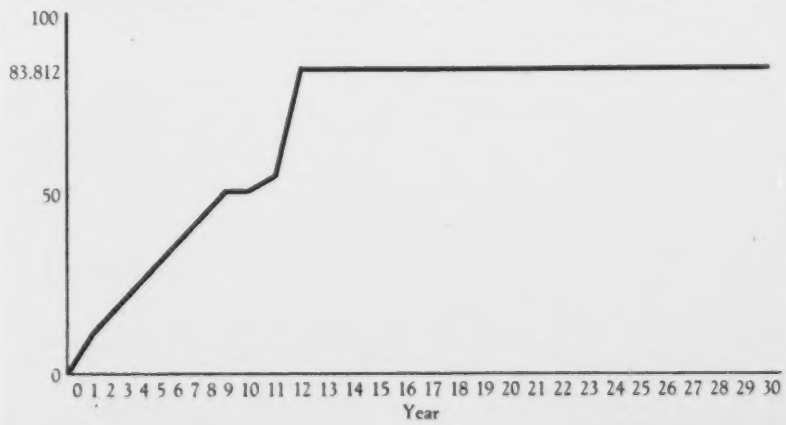


Figure 4:
Plot of the Prepayments as a Percentage of Remaining Balance Assuming 100% FHA Experience

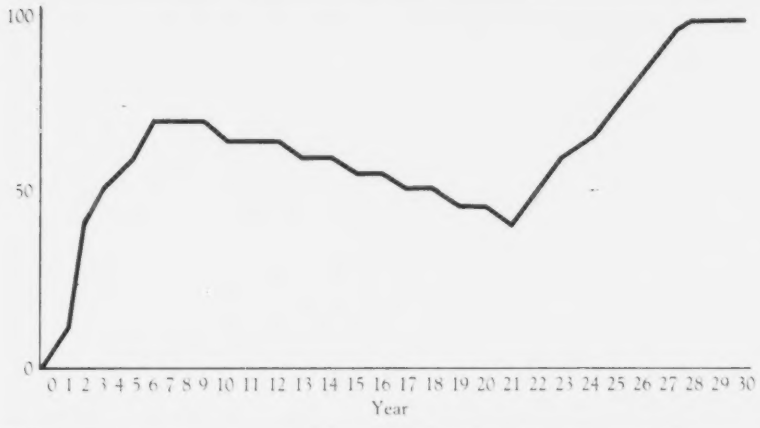


Figure 5:
Plot of the Cashflow to the Investor Discounted at 10% Assuming Prepayments at 100% FHA Experience

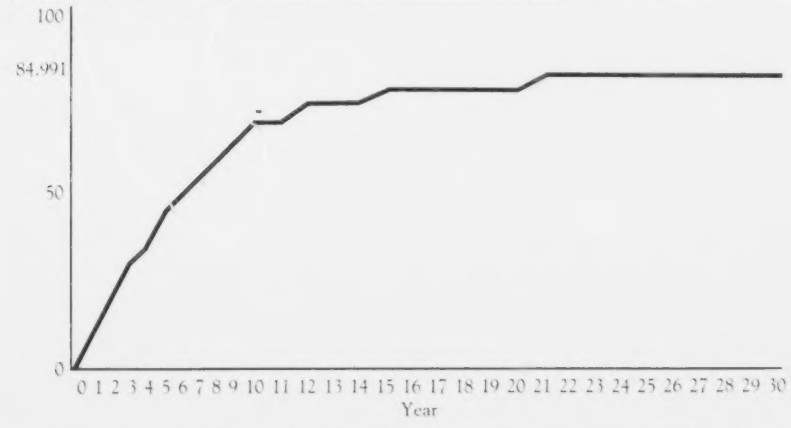
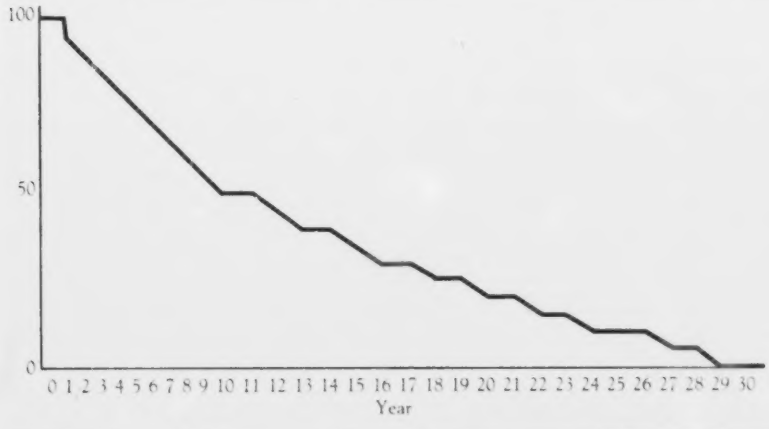


Figure 6:
Plot of the Remaining Balance of an 8% Security Assuming 5% Prepayments



sence of prior knowledge. For an individual loan, it may actually pay off at the value of the parameter.

The remaining balance curve is identical to that of model 1 until the prepayment is made. At that time, the remaining balance drops to zero.

Figure 3 shows a plot of the cashflow that the model predicts the investor will receive. The curve plotted is the one that represents a discount of 10 percent per year.

Mortgage model 3—FHA prepayment mortality

This model assumes that a pool of mortgages will prepay in accordance with FHA's mortgage mortality experience. The FHA maintains a history of mortgage survivorship for mortgages they insure: the number of mortgages still surviving (i.e. not prepaying) year after year starting with an original 100,000 mortgages. This is similar to a life insurance mortality table. Combining this mortgage mortality table with the cashflow arising from mortgage amortization, one can derive a resulting cashflow combining both amortization and prepayment. Starting with a yield, this cashflow can be discounted for price; starting with a price, the resultant yield can be derived.

Because a mortgage pool may prepay faster or slower than the FHA's experience, if following FHA's experience is 100 percent, one can rate a pool "up" or "down" with higher or lower percentages. Given the mortgage interest rate, the service rate, the original term, the starting date, and the actual balances at two different points in time, the required percentage of FHA experience may be precisely determined.

The ability to apply a percentage of FHA experience allows us to specify a lower or higher prepayment expectation than the typical FHA mortgage.

The appeal of this model is that it will probably give more meaningful answers than model 2 because it is very difficult to balance the mortgages around the average in order to take proper account of the time value of the

continued

cashflow. In addition, this model allows us to relate our calculations to data from real life, assuming that the situation is similar to the FHA experience.

Figure 4 is a plot of the percentage of the remaining balance that is prepaid each period. It shows a surprising bimodal pattern that peaks at about seven years and again near maturity. While the first mode is significant to the model, the second is of little or no importance because the cashflow generated is very small and shrinks even further under the influence of the time value of the money.

Figure 5 shows a plot of the accumulated cashflow that the model predicts the investor will receive, discounted at 10 percent per year.

Mortgage model 4—constant percent prepayment

This model assumes that each month after origination a fixed percentage of the mortgage value will be prepaid. This prepayment percentage will be expressed as the equivalent annual percent (i.e. the annual percent = the monthly rate times 12). Given the mortgage interest rate, the service rate, the original term, the starting date, and the actual balances at two different points in time, the required CPP may be precisely determined as with the preceding FHA experience model.

The results of using model 4 are similar to those of using model 3. The appeal of model 4 is that it is easier to envision a single rate of prepayment than a mortality table based on observed, empirical data of somewhat questionable quality and applicability.

The mathematics of manipulating the CPP model are not trivial, yet they are not nearly so difficult as the FHA experience model. As a touchstone, one can derive a table of remaining balances for different CPPs and proceed just as if FHA experience were being used.

Figure 6 shows the remaining balance as a percentage of the original balance assuming a 5 percent rate of prepayments. The result is a concave

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Figure 7:
Plot of the Cashflow to the Investor Discounted at 10% and Assuming 5% Prepayment

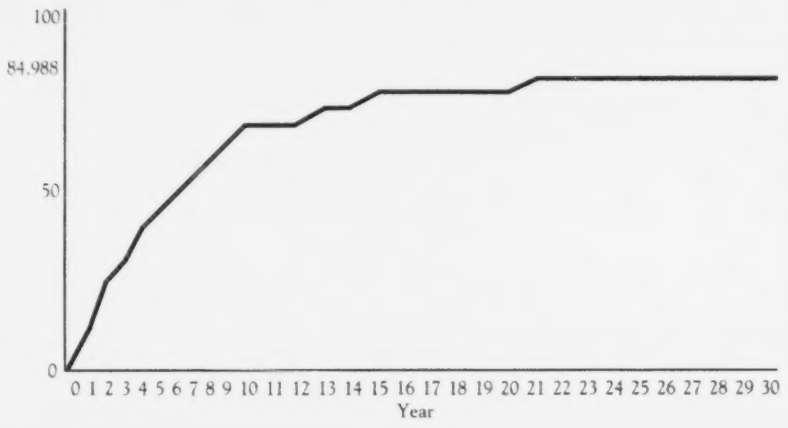


Figure 8:
Table of Equivalence between FHA Prepayment Percentage and Constant Percent Percentage with 0 Years Elapsed

30 Year Term 0 Years Elapsed
Constant Percent Prepayment Table
FHA Prepayment Percentage

To Year	2000	1000	500	200	150	100	50	0
1	22.44%	11.27%	5.65%	2.26%	1.70%	1.13%	0.57%	0.00%
2	48.74	24.62	12.38	4.97	3.73	2.49	1.24	0.00
3	66.66	33.81	17.02	6.84	5.13	3.42	1.71	0.00
4	78.29	39.81	20.07	8.07	6.06	4.04	2.02	0.00
5	87.09	44.36	22.39	9.01	6.76	4.51	2.26	0.00
6	94.87	48.41	24.45	9.84	7.39	4.93	2.47	0.00
7	101.28	51.76	26.16	10.53	7.91	5.28	2.64	0.00
8	106.35	54.41	27.52	11.08	8.32	5.55	2.78	0.00
9	109.76	56.19	28.43	11.46	8.60	5.74	2.87	0.00
10	111.87	57.30	29.00	11.69	8.77	5.86	2.93	0.00
11	113.43	58.12	29.42	11.86	8.90	5.94	2.98	0.00
12	114.46	58.66	29.70	11.97	8.99	6.00	3.00	0.00
13	114.87	58.88	29.81	12.01	9.02	6.02	3.01	0.00
14	114.87	58.88	29.81	12.01	9.02	6.02	3.01	0.00
15	114.53	58.70	29.72	11.98	8.99	6.00	3.01	0.00
16	113.94	58.39	29.56	11.91	8.95	5.97	2.99	0.00
17	113.14	57.97	29.34	11.82	8.88	5.93	2.97	0.00
18	112.20	57.48	29.09	11.72	8.80	5.88	2.94	0.00
19	111.13	56.91	28.80	11.60	8.71	5.82	2.91	0.00
20	109.91	56.27	28.48	11.47	8.61	5.75	2.88	0.00
21	108.56	55.57	28.11	11.33	8.50	5.68	2.84	0.00
22	108.07	55.31	27.98	11.27	8.46	5.65	2.83	0.00
23	108.34	55.45	28.05	11.30	8.49	5.66	2.84	0.00
24	109.31	55.96	28.31	11.41	8.57	5.72	2.86	0.00
25	110.93	56.81	28.75	11.58	8.70	5.81	2.91	0.00
26	113.12	57.96	29.34	11.82	8.88	5.93	2.97	0.00
27	115.82	59.38	30.07	12.12	9.10	6.07	3.04	0.00
28	118.97	61.04	30.92	12.46	9.36	6.25	3.13	0.00
29	124.77	64.10	32.49	13.10	9.84	6.57	3.29	0.00
30	131.88	67.86	34.42	13.89	10.43	6.96	3.49	0.00

curve similar to model 3 but resulting from different data derived from the different assumptions.

Figure 7 shows a plot of this accumulated cashflow to the investor discounted at 10 percent per year. As with the remaining balance, the curve is very like the curve produced by model 3, but again for different reasons.

Comparison between model 3 and model 4

It is interesting to compare model 4 with model 3, because there is a similarity between the two. Each gives a measure of the increased reduction in the remaining balance between two points in time due to prepayments. For a given pool with a known original term and known outstanding balances at two different points in time, the derived FHA experience is a complicated function of the pool interest rate. For the same pool, the CPP rate is also a function of the interest rate. However, a surprising fact appears: once the reduction due to principal payments has been accounted for, the remaining reduction is independent of the interest rate. In other words, given a set of balances at two points in time, each FHA prepayment experience will have an equivalent CPP, and vice versa, totally independent of the interest rate. Figure 8 gives a table of the equivalent CPP to FHA prepayment percentage at the inception of the pool. Similar tables can be produced for different elapsed years.

The manner in which FHA experience is applied is equivalent to 30 annual constant percent prepayment values used sequentially. Figure 9 is a table of the 30 different constant percent prepayments from the current FHA mortgage mortality table. (Note: A similar comparison can be made for models 1 and 2. Model 1 is equivalent to model 4, with the percentage prepayment in all periods equal to zero. Model 2 is equivalent to model 4 with the percentage prepayment set to zero for periods 1 to 143; to 100 for period 144; and to zero for the remaining periods.)

Figure 9:
Table of Annual Prepayment Percentages from Current FHA Experience

YEAR	C%P	YEAR	C%P	YEAR	C%P
0– 1	1.13	10–11	6.80	20–21	4.20
1– 2	3.84	11–12	6.62	21–22	5.08
2– 3	5.30	12–13	6.29	22–23	5.99
3– 4	5.89	13–14	6.02	23–24	6.94
4– 5	6.39	14–15	5.75	24–25	7.93
5– 6	7.03	15–16	5.48	25–26	8.93
6– 7	7.36	16–17	5.23	26–27	9.93
7– 8	7.49	17–18	4.99	27–28	10.93
8– 9	7.23	18–19	4.76	28–29	15.53
9–10	6.90	19–20	4.48	29–30	18.38

Figure 10:
Table of Equivalent Constant Percent Prepayments for Different Elapsed Years

FHA%	30 YRS 0 ELP	29 YRS 1 ELP	28 YRS 2 ELP	27 YRS 3 ELP	25 YRS 5 ELP	23 YRS 7 ELP	20 YRS 10 ELP
2000	51.05	85.14	105.92	116.59	135.65	140.16	128.33
1500	42.50	66.87	81.47	89.10	103.19	107.34	96.97
1000	32.57	47.51	56.29	61.40	69.94	71.16	64.14
800	28.03	39.24	46.02	49.68	56.08	56.86	51.35
500	19.91	26.18	29.88	32.18	35.11	35.13	31.67
400	16.78	21.60	24.31	25.88	28.17	27.75	25.02
300	13.35	16.62	18.59	19.57	20.99	20.59	18.66
200	9.40	11.43	12.54	13.15	13.90	13.57	12.27
150	7.28	8.68	9.48	9.88	10.38	10.08	9.19
125	6.16	7.27	7.92	8.25	8.58	8.35	7.66
100	4.99	5.85	6.36	6.58	6.85	6.68	6.06
75	3.81	4.41	4.76	4.96	5.13	4.98	4.54
50	2.58	2.96	3.17	3.28	3.42	3.30	3.01
25	1.30	1.48	1.60	1.65	1.69	1.63	1.50
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00

A natural question that arises is: "What is the CPP most representative of a given FHA experience percentage?" Using the current FHA mortality table, we have derived a CPP that is approximately equivalent to the anticipated percent of FHA experience for each number of elapsed years, under today's market conditions. Figure 10 is a table of these percentages.

To show the relationship between the models more clearly, Figure 11 shows a plot of the cashflows predicted by an FHA experience model at 100 percent FHA and a CPP model at 5.00 percent.

A conclusion that we would draw from the preceeding demonstration is that the CPP model is as useful as the FHA experience model. In fact, the FHA experience factors are not sufficiently precise as to warrant preferring that model to the CPP model.

Comparisons of models 3 and 4 based upon actual experience

Both the FHA experience model (model 3) and the CPP model (model 4) forecast cashflows and outstanding balances given the actual outstanding balances at two different points in time. Possibly the most extensively studied pools are those insured by GNMA. We have chosen three typical pools for comparison. We wish to compare the actual, observed outstanding balance from origination to July 1983 with the

continued

Figure 11:
Plot of the Cashflow to the Investor with 100% FHA Experience and 5.00 % Constant Percent Prepayment

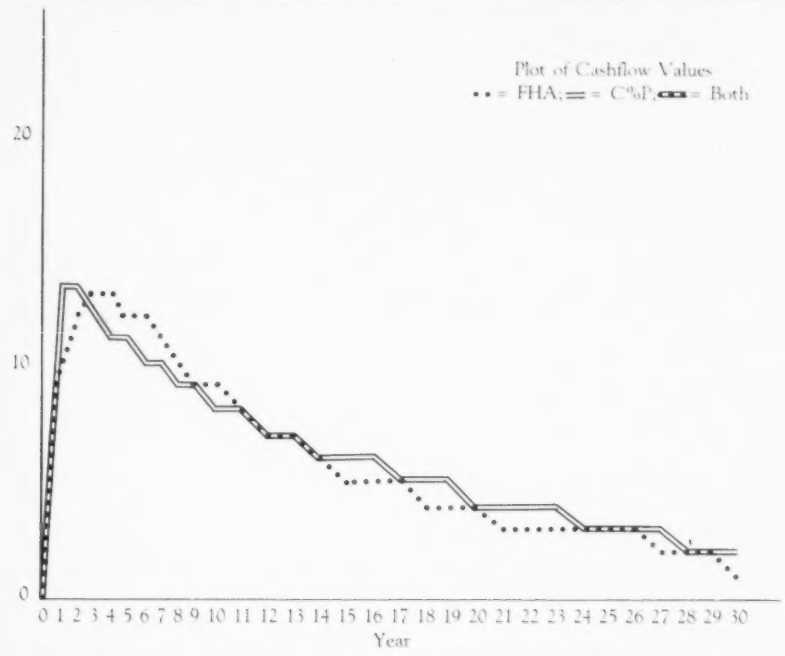


Figure 12:
Examples of Pool Performance

Pool Number	21354		50394		50263	
Pool Rate	8%		12%		16%	
Issue Date	1/01/78		8/01/81		11/01/81	
As Of	Balance	Factor	Balance	Factor	Balance	Factor
	FHA%	C%P	FHA%	C%P	FHA%	C%P
Issue Date	3,968,387	1.00000	4,014,167	1.00000	1,019,203	1.00000
	0	0.000	0	0.000	0	0.000
7/01/80	3,731,792	.94038				
	214	1.643				
1/01/81	3,535,763	.89098				
	142	3.009				
7/01/81	3,486,134	.87848				
	71	2.843				
1/01/82	3,436,591	.86599	4,008,425	.99857	1,018,203	.99951
	67	2.717	2	0.030	15	0.172
7/01/82	3,389,716	.85418	4,001,290	.99679	1,017,135	.99797
	62	2.600	1	0.027	16	0.177
1/01/83	3,370,146	.84925	3,949,986	.98401	967,480	.94925
	52	2.343	35	0.803	285	4.323
7/01/83	3,303,311	.83241	3,895,859	.97053	695,067	.68197
	50	2.386	44	1.214	1030	22.611

outstanding balances forecast by FHA experience and CPP. The three pools we have chosen are as follows:

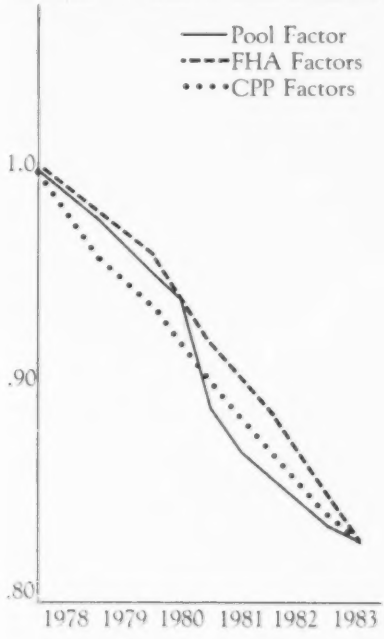
1. GNMA #21354, 8%, Original Balance $3,968,387 issued on 1/01/1978 with final maturity on 1/01/2008.
2. GNMA #50694, 12%, Original Balance $4,014,167 issued on 8/01/1981 with final maturity on 8/01/2011.
3. GNMA #50263, 16%, Original Balance $1,019,203 issued on 11/11/1981 with final maturity on 11/11/2011.

Figures 12 & 13 show the actual experience versus the expected. Figure 12 is a table showing the pool balance at various points in time. With each point is the factor, that is, the fraction of the original balance still outstanding, the FHA exprience percentage at the time, and the CPP.

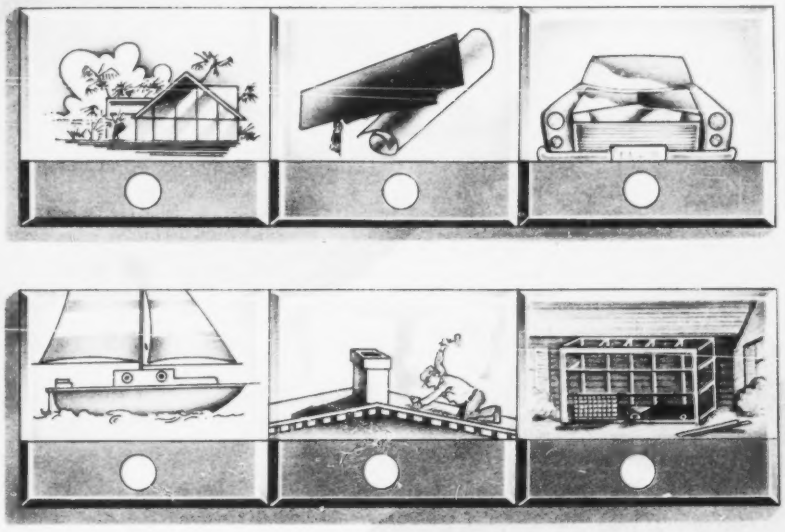
Figure 13 shows a plot of the balance factors for Models 3 and 4 for pool number 21354. It shows that the CPP curve is consistently below the FHA one. Similar plots for the other sample pools produce similar results. This is reasonable because early in the life of each pool the fraction prepaying under the FHA experience model starts at a low value and then increases through

continued on page 72

Figure 13:
Observed Outstanding Balances of Pool #21354 (reduced to unit value) and equivalent FHA and CPP factors



Enjoying Equity *with Second Mortgage Loans*



David A. Olson

Second mortgages are probably the most exciting area of consumer credit today. From a small, obscure form of credit dominated by consumer finance companies 13 years ago, they have become big business. They are now offered by virtually every form of lender and by most of the largest financial institutions. What was once considered somewhat obscure has become popular not only with the big commercial banks in the field but also with the big investment banks. No other type of consumer credit is growing as fast or has attracted as wide a variety of lenders. Recent developments in the growth of this type of credit include the possibility of private mortgage insurance coverage, the opening of the secondary market, and the offering of revolving adjustable rate second mortgages.

In attempting to measure the second mortgage market's current size and rate of growth, the Federal Home Loan Mortgage Corporation (Freddie Mac) discovered that the market is big, is growing rapidly, and has a large potential for further growth. Mortgage bankers and other lenders should find second mortgages a very attractive additional service. *continued*

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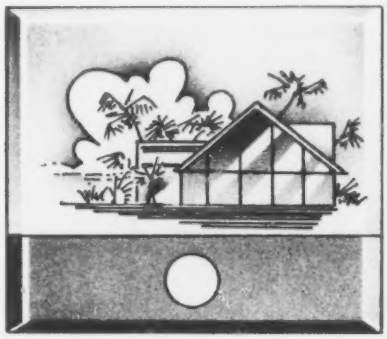
-g. byron peck- '84



Definition

Freddie Mac considers a second mortgage to be any loan secured by a junior lien on a one-to-four family residential property or condominium. Excluded are loans secured by junior liens on commercial or industrial properties, with the exception of non-owner occupied one-to-four family properties and condominiums. Some market participants refer to second mortgages as "home equity finance." There are three general types of second mortgages when judged by use of the loan: home improvement loans; purchase money/refinance loans; and personal loans secured by junior liens for purposes unconnected with the property, such as loan consolidation, vacations, education, and medical expenses.

Statistical problem

Despite the vast size and rapid growth of this form of loan, there are very little data and scanty literature on the subject. The main reason for this lack of information is the practice of commercial banks and savings and loan associations of combining most of their first and second loans on their balance sheets. Neither the Federal Reserve nor the Federal Home Loan Bank Board has attempted to report this type of mortgage loan separately, except for a few ad hoc, partial reports. Consumer finance companies are not Federally regulated, and so neither agency has regularly reported on this market segment. The Federal Reserve did do benchmark surveys of the consumer finance company seconds in 1975 and 1980 and beginning in 1984 will do monthly reports on this market segment.

No single trade association embraces the industry. The two most relevant associations are the American Financial Services Association (AFSA, formerly called the National Consumer Finance Association) and the National Second Mortgage Association (NSMA). Neither has attempted to measure the entire market. The AFSA only recently attempted to measure the consumer finance segment of this market. The NSMA's annual survey covers rates and terms but not market size. Measures of credit union and mortgage banker second mortgage loans outstanding ("outstandings") are published annually by the Credit Union National Association and the Mortgage Bankers Association.

The only really comprehensive data have come from the decennial census by the U.S. Bureau of the Census. These data have been collected on second mortgages for the past four decennial surveys as part of the residential finance survey. The data for 1981 were just released and form the central basis for this study. (See Table 1.) In mid-1981, the Census Bureau looked at a stratified sample of 17,046 residential land parcels of which 926 had junior liens (5.43 percent). Data were collected from the property owners on the second mortgage lender, who was then contacted. Because the survey is mandatory, the response rate was more than 90 percent. The Census findings contain at least three questionable numbers, which have been modified in Table 2.

Second mortgages held by consumer finance companies that are wholly owned by commercial banks are reported as held by commercial banks in the Census Report. This results in a greatly understated total for consumer finance companies. For this reason, the Census figure is inconsistent with the results of the surveys taken by the Federal Reserve and the AFSA. Those two surveys measure consumer finance holdings in 1981 at about $11 billion, which is almost double the Census residual category "other," where consumer finance companies are included. Analysts at the Census Bureau admit this problem. It is estimated that the size of this error is about $5 billion.

The second problem is of similar magnitude. Mortgage companies are reported as holding $4.2 billion in second mortgages, which is inconsistent with the MBA's 1981 survey results. That survey reported mortgage bankers originating $740 million in second mortgages in 1981. Because mortgage bankers typically would hold only two months of originations in inventory (and second mortgage companies hold little or nothing), this must be the amount of loans serviced. In mid-1981, most of mortgage bankers' second mortgages were reportedly sold to commercial banks. Therefore, the total stock of mortgages held by mortgage bankers and second mortgage companies was more likely around $400 million, and the commercial bank number should probably be raised by around $2 billion. The rest of the amount incorrectly allocated to mortgage companies was distributed among individuals, consumer finance companies, and others as shown in Table 2.

The third questionable number is the creation of a category called "Federal Secured Pools" having $273 million. There has never been a Federally secured pool of second mortgages. This category actually consists of loans held by the Farmers Home Administration (FmHA). So this category should really be combined with the category "Federal Agencies," because conceptually it is no different. That category includes primarily defaulted loans held by the Small Business Administration (SBA) and The U.S. Department of Housing and Urban Development (HUD) (FHA Title I and 312 loans).

Size of market

In 1971, total outstandings were estimated at about $4.9 billion. The actual number reported by the Census

continued

David Olson is the Director of Product Development Analysis at Freddie Mac. He formerly worked as an economist and financial analyst at Commercial Credit Co., Household Finance Corp., and Trans Union Corp.

Table 1

Junior Mortgage Loan Outstandings by Holder, 1981

($ millions)

Commercial Banks	$12,790
Individuals or Estates	8,290
Savings and Loan Associations	6,824
Mortgage Companies	4,167
Mutual Savings Banks	748
Federal Agencies	447
Real Estate or Construction Companies	407
Federal Secured Pools	273
Life Insurance Companies	1
Other	6,693
Total	$40,639

Source: U.S. Bureau of the Census, 1980 Census, Residential Finance, HC 80-5

Table 2

Junior Mortgage Loan Outstandings by Holder, 1981

($ millions)

Consumer Finance Companies		$11,400
Commercial Bank Owned	$5,507	
Other	5,893	
Commercial Banks		9,733
Individuals and Estates		9,000
Savings and Loan Associations		6,824
Credit Unions		1,000
Mutual Savings Banks		748
Federal Agencies (HUD-FHA, SBA, FmHA)		720
Real Estate or Construction Companies		407
Life Insurance Companies and others		407
Mortgage Companies		400
Total		$40,639

Source: U.S. Bureau of the Census, 1980 Census, Residential Finance HC 80-5; Federal Reserve Board; Credit Union National Association; HUD; Mortgage Bankers Association; California Association of Realtors; American Financial Services Association; Record Data, Inc.; The Money Store.

Bureau was $4.1 billion, but the Census report included nothing for consumer finance companies, which was known from the NCFA survey to be about $800 million. By 1981, the Census Bureau measured outstandings at $40.6 billion. (See Table 1.) That implies a compound average annual growth of 24 percent during that decade. That is a phenomenal record and by far exceeds the rate of growth for total personal credit. The only other major segment of personal credit that grew at nearly this rate was credit cards. According to data available at Record Data, Inc. (a courthouse record verification firm in Cleveland, Ohio), second mortgage originations grew from $20 billion in 1981 to $36 billion in 1983. This implies that in 1983 total outstandings could be as high as $70 billion, which would mean a 31 percent compound annual average growth rate during the past two years.

The holders of outstandings in 1981, judging from the best available data sources (see Table 2), were consumer finance companies (whether independent or wholly owned by commercial banks or other financial institutions) with $11.4 billion. Commercial banks held an estimated $9.7 billion, individuals probably held $9 billion, S&Ls $6.8 billion, credit unions $1 billion, mutual savings banks $700 million, Federal Agencies (SBA, HUD, and FHA) $700 million, real estate and construction companies $400 million (of which the majority is held by builders), life insurance companies and others $407 million, and mortgage companies $400 million.

Comprehensive data on second mortgage volume are unavailable. Judging from the Federal Reserve survey, volume was about half the size of outstandings in 1980. This implies that total volume in 1981 for all lenders was about $20 billion. This number is verified by sources at Record Data, Inc., who also have estimates for 1982 and 1983. (See Table 3.) In 1971, volume was about $2 billion, which implies a compound average annual growth rate of 26 percent more than the 1971–1981 decade and some acceleration since.

In 1983, it is estimated that consumer finance companies dominated the industry with origination volume of $11 billion. Commercial banks were the next largest segment with about $8 billion, up from $3 billion in 1981. This segment is probably growing the fastest. The third biggest segment is individuals (mostly seller take-backs). This segment is probably about $5 billion and declining from a peak of $5.5 billion in 1982. With the expanded powers granted them under the Garn-St Germain Depository Institutions Deregulation and Monetary Control Act, S&Ls have been aggressively expanding their second mortgage originations and are up to about $4.2 billion in 1983 from $3.4 billion in 1981.

Mortgage companies may have originated as much as $6.0 billion in 1983, up from $2.1 billion in 1981. Mortgage bankers, which are larger firms that not only originate but also service these loans after they are sold to permanent investors, did about $1 billion in 1983, which is double the pace of 1981.

Second mortgage companies, which are smaller firms and only originate loans for others but do not service them, appear to be growing at a rapid pace based on reports from Record Data, Inc. and The Money Store. The volume originated by these firms may have grown to $5 billion in 1983, up from $1.4 billion in 1981.

The next largest originator segment is probably credit unions, with an estimated $900 million in 1983. This segment is followed by the mutual savings banks, with an estimated $500 million in 1983, up from $350 million in 1981. (Mutual savings banks are primarily in the Northeast and are following the growth pattern of S&Ls.)

Investment bankers did about $300 million in 1983 and are growing very rapidly. Real estate companies and construction companies may have originated about $100 million in 1983 and probably are experiencing little growth.

continued

Contract types

Second mortgages can also be classified according to contract type: fixed contract vs. revolving. Revolving credit programs using home equity as collateral and accessed through check or credit card are the latest milestone in the development of second mortgages. This innovation began in January 1982 with Merrill Lynch's Equity Access Loan. The only other originators known to be in this form of lending are several other investment brokers (Shearson/American Express, E.F. Hutton, and more recently Dean Witter/Sears and Prudential/Bache); some of the large commercial banks (Citibank, Goldome, Chemical Bank, Wells Fargo, and Crocker); and a few large consumer finance companies (Beneficial).

The NSMA believes that only 5 percent of consumer finance originations are in the revolving contract form. Perhaps 10 percent of commercial bank originations are of this form. All investment broker volume comes in this form. (See Table 4.) This means that only about $1.3 billion, or around 6 percent of current originations, are revolving loans. But it is clear from discussions with the major originators that this is the pattern of the future and could constitute half of volume within a few years.

Second mortgages can be perceived from yet another perspective: fixed-rate yield or adjustable. Similar to the trend within the residential first mortgage and commercial loan market, lenders are becoming concerned about having any fixed-rate assets in their portfolios. Very little data are available on the proportion of adjustable rate seconds, but it appears to be somewhat less than 5 percent of total volume. Moreover, most of the adjustables are also apparently revolving loans. They are offered by the investment brokers and the large commercial banks mentioned above. There is clearly a great deal of interest in this form. Rates are very competitive. Two points over prime seems to be typical. At least one firm is offering loans for as low as 1½ points over prime. Known adjustment periods being offered in the market are daily, monthly, annually, and triennially.

Table 3

Second Mortgage Originations 1978-1983 ($ billions)

YEAR	1978	1979	1980	1981	1982	1983
Commercial Banks	$ 1.6	$ 1.8	$ 2.0	$ 3.0	$ 5.0	$ 8.0
Svgs. & Loan Assns.	1.0	1.8	2.7	3.4	4.0	4.2
Mutual Svgs. Banks	.1	.2	.3	.35	.4	.5
Mortgage Bankers	.3	.3	.5	.7	.6	1.0
Cons. Finance Cos.	3.2	4.2	5.3	6.5	7.0	11.0
Second Mtge. Cos.	1.0	1.1	1.2	1.4	2.5	5.0
Seller Takebacks	3.0	4.0	5.0	5.0	5.5	5.0
Credit Unions	.2	.3	.4	.5	.7	.9
R.E. & Const. Cos.	.1	.1	.1	.2	.2	.1
Investment Brokers	0	0	0	0	.1	.3
Total	$10.1	$13.4	$17.0	$20.4	$26.0	$36.0

Source: Advance Mortgage Co., U.S. Housing Markets; Federal Reserve Board; U.S. Bureau of the Census; FHLMC; National Second Mortgage Association; American Financial Services Association; Record Data, Inc.

Trend in yields

One of the unusual features of second mortgages is the wide spread of yields that can exist in a given market at the same time. In the mid-1970s, yields ranging from 10 to 23 percent were observed. The lower rates represented discounted rates on takeback seconds, and the higher rates represented high-risk personal loans for small amounts. Because interest rates on first mortgages were 8 to 10 percent, there was an extensive spread in first mortgages.

By the late 1970s, first mortgage rates rose, and the spread narrowed. Four hundred basis points (bp) were more typical. In 1979, private mortgage insurance firms began to insure second mortgages, which helped to reduce this spread. The entry into the secondary market for second mortgages of Freddie Mac in February and Fannie Mae in November 1981 also contributed to a lowering of these spreads.

Second mortgage originators who were waiting to sell into the secondary market then were confident that they had a floor to their potential profit spread, namely the servicing they would gain from the loan sold to Fannie Mae or Freddie Mac. Perhaps it was this reduction in their downside risk that made originators willing to accept a lower gross yield. Another reason for this acceptance was the great increase in the average size of a loan, because operating costs were not fixed and thus increased far less than proportionally to loan size. More highly leveraged lenders (commercial banks and S&Ls) who could be profitable with the lower spreads were entering the market.

Yet another reason for this acceptance was the lower risk many lenders experienced with their second mortgages than with their first mortgages.

Table 4

Investment Broker Second Mortgage Outstandings, 1983

($ millions)

Merrill Lynch	$200
Shearson/American Express	80
E.F. Hutton	40
Dean Witter/Sears	neg*
Prudential-Bache	neg*
Total	$320

Source: National Second Mortgage Association

*neg. = negligible; just starting

Freddie Mac, for example, recently had a 2 percent delinquency rate on its second mortgages vs. a 2.6 percent delinquency rate on its first mortgages.

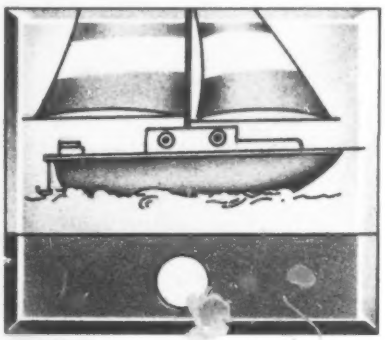
By 1982, the spread over 30-year fixed-rate first mortgages was more commonly 50bp. It could be argued that in the future, rates for large, low loan-to-value (LTV) second mortgages will be driven down to rates for 15-year first mortgages. Rates for adjustable rate seconds are already available for as low as 1½ points over prime, or a total of 12.5 percent. This is the upper range of rates that some lenders get for first mortgage, one-year ARMs.

Regional trends

Regional data on second mortgages are almost impossible to obtain on a comprehensive basis. Surveys by NAR and General Electric Mortgage Insurance Corporation (GEMIC) indicate that second mortgages are much more widespread in the West than elsewhere in the country and are least prevalent in the Northeast. In the West, 94.4 percent of S&Ls offer seconds. In the North Central, 81.7 percent. In the South, 73.9 percent and in the Northeast, 67.6 percent. This would reflect the much sharper increase in home prices in the West and the younger median age of the population. S&Ls tend to be larger in the West. There is more home equity to borrow against. With much higher average home prices, second mortgages become virtually standard. Younger people (21 to 45) tend to borrow more than those over 45.

Underlying potential

The underlying foundation of this form of lending is unencumbered home equity, which appreciated enormously with the increase in inflation in the 1970s. By 1981, the value of home equity, excluding all forms of home mortgage debt, was $1.7 trillion (according to the decennial census). Despite the rapid increase in second mortgage debt as a percentage of unencumbered home equity, it only constituted 2.4 percent in 1982. [Note that the 1981 Census survey found that 5.43 percent of all



residential properties had junior liens.] In 1971, the second mortgage debt to unencumbered home equity ratio was 0.2 percent. And there is still virtually unlimited room for further second mortgage growth, because the available collateral has barely been touched.

Growth trends

Of the three basic types (by use) of second mortgages, the greatest growth is likely to take place in personal loans. This segment, which already comprises about half the market, is particularly well-adapted to the new revolving adjustable loans. Most lenders would rather not be bothered with policing the use of the funds. One study by a major lender showed that half of its customers misrepresented the use they would make of the funds. Because there seems to be little correlation between use and default, lenders are tending to overlook use, prefering the flexibility of not having to ask what use will be made of the loan proceeds. This is the market segment that is attracting the big commercial and investment banks.

Home improvement seconds should experience a smaller growth rate because much of the volume is shifting to personal loan seconds, and lower interest rates on firsts are permitting some homeowners to sell their homes rather than to enlarge their present ones. Still, home improvement loans tend to increase with economic expansion, as consumers increase their discretionary income. California homeowners have a further inducement to improve their homes rather than sell, because under Proposition 13 their real estate taxes are based on the assessed value of their home in 1975 plus no more than a 2 percent annual appreciation. Because home prices rose enormously in the late 1970s, there is therefore a great incentive for those who purchased earlier to remain in their homes.

The other segment of this market—purchase money/refinance loans—will probably experience the least growth. Very few assumable, conventional, fixed-rate, first mortgages remain, which was the great impetus to growth in this segment. There appears to be a marked decline in seller takebacks. Of course, FHA/VA first mortgages can still be assumed and thus support this market segment. Currently the net effect may be no growth in this market segment.

Advantages

Thus, it would appear that the total growth in second mortgage volume is probably currently up from the 25 percent annual rates of the 1970s and more likely growing about 30 percent per year. Most of the growth is in the personal loan segment, particularly the revolving adjustables offered by the big commercial and industrial banks. The added competition from these new lenders could very likely bring yields down to levels comparable to 15-year first mortgages. In the near future, more active participation by Freddie Mac and Fannie Mae in this market (if permitted by Congress) would also support this trend. Freddie Mac hopes to get additional powers from Congress to acquire purchase money/refinance second mortgages.

For a lender looking for increased growth and profits, second mortgages offer several distinct advantages. Gross yields still exceed those for first mortgages by about 50bp. Delinquency rates and charge-offs for programs run by most experienced lenders are below those for first mortgages. Growth rates in volume are very high, possibly exceeding rates for any other product. The market is large, and potential growth based on remaining unencumbered equity is vast. There could be a great deal more substitution from other forms of lending, especially away from

continued

unsecured personal loans, which became so unprofitable to lenders following the Bankruptcy Act that became effective in October, 1979. Average experienced maturities (average length of time loan stays in portfolio) are about half of those for 30-year first mortgages (i.e., about 4 years), thus permitting a closer maturity match between assets and liabilities. The ability to sell loans in the secondary market gives added flexibility to these loans. Now with the possibility of making these loans adjustable and revolving, one can diminish interest rate risk even further, lower origination costs, and keep these loans on the books for a longer period. These features indeed make second mortgages very attractive. All lenders should give this market a close look. □

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HEDGING GNMA PASS-THROUGHS

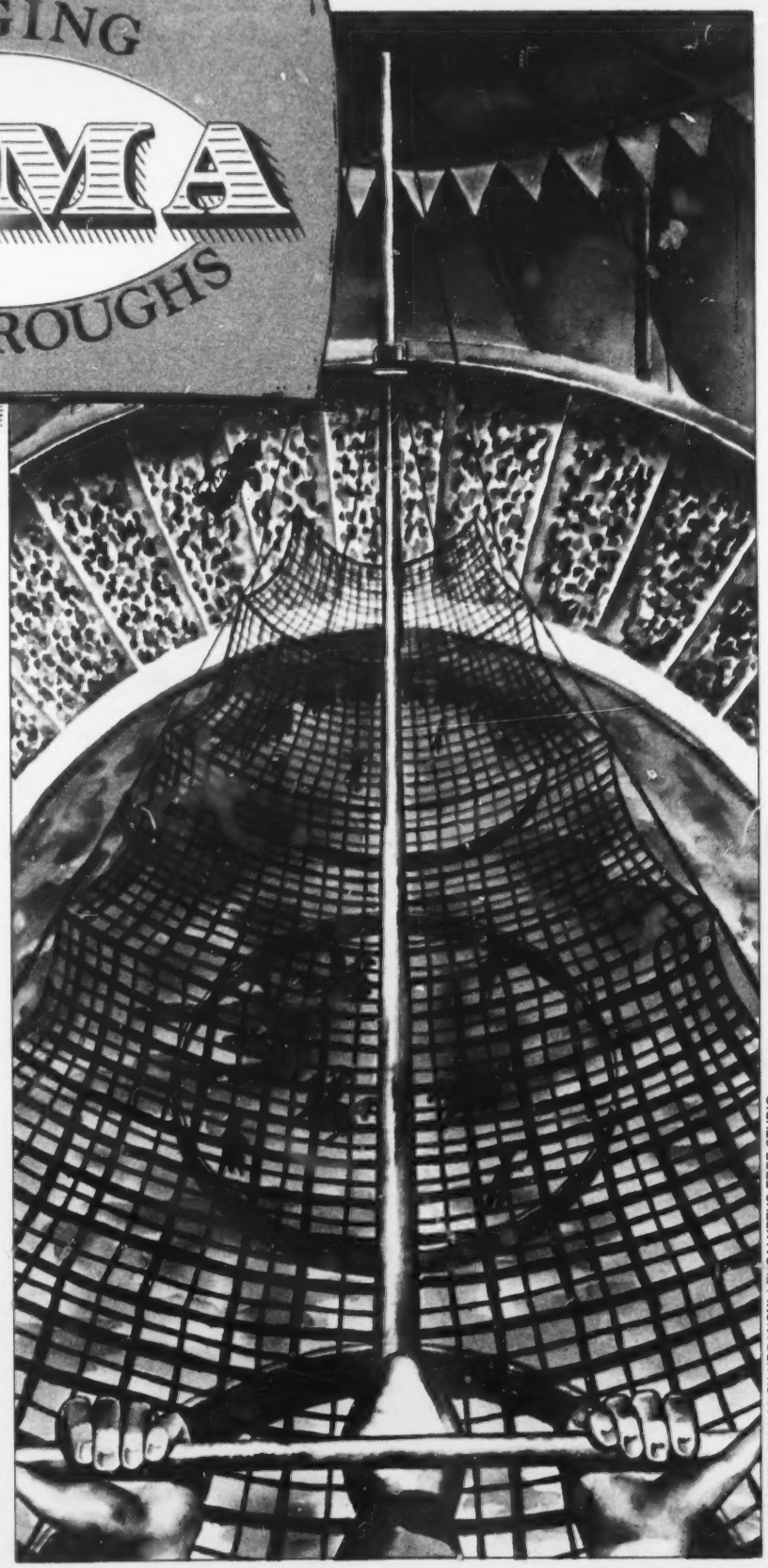

ILLUSTRATION BY NANCY URBANSKI / EUCALYPTUS TREE STUDIO

Glenn Picou

In 1975, the Chicago Board of Trade began trading future contracts based on Government National Mortgage Association (GNMA) pass-through certificates. The introduction of GNMA futures marked the birth of the financial futures markets, now the largest segment of the futures industry. In less than 10 years of activity, financial futures have come to account for almost half of all futures trading.

Despite its pioneer role, the GNMA futures market has not kept pace with the overall expansion in financial futures trading. This shortfall has occurred notwithstanding the relentless growth in all facets of activity in the cash GNMA market: originations, secondary market trading, and volume outstanding. In addition, the subdued expansion of the GNMA futures market has occurred over an extended period of time that was marked by an unusual degree of interest rate volatility.

The below-trend growth of GNMA futures can be traced in an important way to their limited use as a hedging vehicle among the key participants in the cash GNMA markets: mortgage bankers, thrift institutions, banks, and money managers. It is no doubt true that GNMA futures have confronted the traditional obstacles such as unfamiliarity and a persistent speculative connotation. However, these obstacles have been overcome by other segments of the financial futures markets: T-Bond futures at the Chicago Board of Trade and the family of short-term futures contracts traded at the International Monetary Market—T-Bills, Domestic CDs, and Eurodollar Time Deposits.

continued

The growth in these popular futures markets clearly occurred in response to the pronounced interest rate volatility of the past several years. The resultant financial risk provided a sharp incentive for many financial institutions to use every tool at their disposal for hedging their balance sheets and earnings statements against the adverse effects of unanticipated rate movements. Those who have ventured into the markets recognize that like the cash markets, futures are inherently neither speculative nor prudent. Rather, it is the manner in which any market is used that renders it safe or risky. To many financial firms the futures markets have come to be appreciated as an efficient risk transfer mechanism.

GNMA cash and futures: some key features

That GNMA futures have not so far achieved the same degree of use as other financial futures stems from the fact that GNMAs—both the futures contract and the underlying security—entail a degree of complexity not encountered in the more popular futures markets. There are two key features in particular that can present difficulty: principal paydown and futures contract specifications.

Principal Paydown. Scheduled amortization plus unscheduled prepayments distinguish GNMA pass-throughs (and all pass-throughs for that matter) from conventional fixed-income securities. This aspect of GNMA pass-throughs requires explicit consideration in the design of effective GNMA hedges.

Futures Contract Specifications. The original Chicago Board of Trade futures contract called for delivery not

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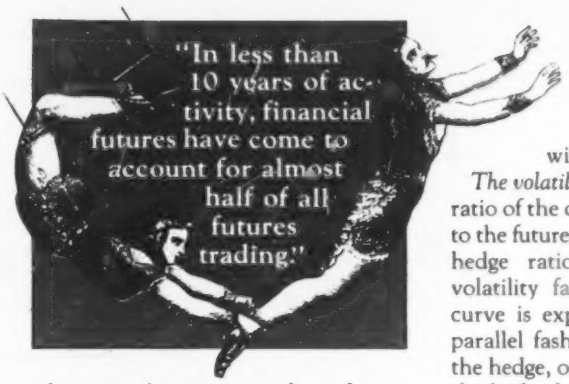


of an actual GNMA pass-through certificate, but of a Collateralized Depository Receipt (CDR)—in essence a warehouse receipt for a GNMA. Thus the GNMA CDR futures contract not only incorporated a complicated delivery step, but also introduced an additional source of risk into the hedging of GNMAs.

A more important source of basis risk stems from the fact that the CDR contract permits delivery of any GNMA coupon. As a result, the CDR contract has frequently failed to price off of current production GNMAs.

A new futures contract—the GNMA II—has been proposed that would reduce the basis risk previously associated with hedging GNMAs.

Hedging GNMA pass-through securities

At one level, hedging GNMAs as well as other mortgage-backed securities (MBSs) involves the same considerations as hedging conventional fixed-income securities. For any given GNMA coupon, the hedge ratio (dollar value of futures relative to dollar value of hedged GNMA) can be viewed conceptually as the product of two factors.

The maturity factor relates the dollar value of a given yield change for the hedged security to the dollar value of an equivalent yield change in the futures contract. In all cases where yields on both the hedged GNMA cash investment and the GNMA coupon underlying the GNMA futures (the cheapest deliverable GNMA) could be expected to move together, the maturity factor could be used as a good first approximation of the hedge ratio. The most obvious case would be hedging the cheapest GNMA with GNMA futures.

The volatility factor is the anticipated ratio of the cash (hedged) yield change to the futures (hedge) yield change. The hedge ratio must incorporate the volatility factor whenever the yield curve is expected to shift in a nonparallel fashion over the duration of the hedge, or more generally whenever the hedged instrument is not likely to display the same yield fluctuations as the futures contract (or its underlying security).

The maturity and volatility factors are in principle two distinct steps in the hedge ratio determination process. As a practical matter, however, these two steps can generally be compressed into a one-step procedure by applying statistical regression analysis directly to the prices of the cash (hedged) instrument and the futures contract. The resultant regression coefficient can be interpreted as the hedge ratio.

GNMA principal paydown and pool speeds

At a second level, hedging mortgage-backed pass-throughs with GNMA futures involves a consideration not typically present in hedging conventional fixed-income securities: principal paydown. Principal paydown consists of two components. *Scheduled* repayments are provided for in the amortization schedules of the mortgages underlying the GNMA pass-through certificates. *Unscheduled* prepayments are due to either early retirement of mortgage debt, or default on which GNMA guarantees principal payment.

For any given GNMA pool, the amortization schedule for each mortgage remaining in the pool is known, and thus the scheduled repayment can be readily calculated. But the rate at which unscheduled prepayments occur depends on numerous factors, including the general level of mortgage rates and regional and demographic influences.

Unscheduled principal prepayments

continued

and scheduled repayments combine to determine overall *pool speed*. There are pool speed statistics available on a regular basis that express the speed of each GNMA pool in terms of normal (historical) FHA prepayment experience. A pool experiencing no prepayments would have a 0 percent speed; a 100 percent speed pool experiences normal FHA prepayments; a 200 percent speed pool reflects twice the normal FHA experience, and so on.

Chart 1 indicates how the speed on various GNMA pools varied during 1983 and emphasizes how erratic pool speeds can be. It is the impact of unscheduled prepayments on fluctuations in pool speed that complicates the design and implementation of pass-through hedges.

Chart 1

GNMA Pool Speeds (% of FHA Experience)

Pool Rate	Year Issued	1/83 2/83	2/83 3/83	3/83 4/83	4/83 5/83	5/83 6/83	6/83 7/83
11%	79	32	396	212	84	66	73
	80	62	40	66	68	82	80
	81	48	0	28	0	25	69
12%	80	310	146	3	98	268	176
	81	33	290	88	91	22	150
	82	73	55	39	73	89	113
12.5%	80	91	97	137	161	143	162
	81	276	66	89	135	145	148
	82	28	87	192	322	305	86
13%	81	150	138	191	180	181	174
	82	163	145	180	200	342	378
	83	—	1540	0	235	265	276
14%	81	394	375	628	638	781	589
	82	897	1395	2121	2422	2668	538
	83	—	382	285	201	4947	678
15%	81	1056	1076	1613	—	819	1147
	82	2817	3227	4854	2878	—	3443
	83	—	0	337	822	—	1287
16%	81	1835	1720	2590	3969	2372	1716
	82	4831	5558	2121	3599	2040	1478
17%	81	2171	1943	2630	4476	2676	2085
	82	2069	2632	2989	5581	2904	1350

Source: GNMA Report, Financial Publishing Company, Boston, Massachusetts

Pool speed and hedge design

A GNMA hedge must be designed to allow for the potential impact of pool speed on changes in *principal value* of the hedged GNMA position over the period of the hedge. If the hedge is not appropriately adjusted for declining principal value, an over-hedged position could develop, resulting in the risk that favorable rate movements would produce futures losses exceeding gains in the hedged cash position.

For example, consider a savings institution positioning $10,000,000 principal value of 15 percent GNMAs with the expectation of selling the securities one year later. It wants to hedge the position against the risk of a rate increase by selling GNMA futures. Through the statistical approach discussed above, it is determined that the hedge ratio for $1,000,000 GNMA 15s is 13.4 GNMA futures contracts, or a total of 134 GNMA futures for the $10,000,000 position.

At the time the position was established, GNMA 15s were estimated to have a pool speed of 800 percent. At that speed, the principal value of the pool would be paying down at a rate of roughly 35 percent per year, or $275,000 per month. After 12 months, the remaining principal balance would be $6,700,000; it is this amount, not $10,000,000, on which the thrift faces a loss if rates have risen, and that should determine the futures position at the *end* of the 12 month period—90 contracts (13.4×6.7 mil.) But, the full $10,000,000 must be hedged *initially* to allow for the possible need to sell the position sooner than planned. Then the hedge must be unwound as closely as possible in synchronization with the pay-down of principal. This could be accomplished, for example, by buying back 4, 4, and 3 contracts per month consecutively over each three-month period of the hedge.

Variable pool speeds

At a third level, introducing the possibility of pool speed changes significantly complicates the hedge design problem. The speed of a pool influences the location of the pool on the yield curve, and thus the dollar value of a basis point. In turn, the prospective change in market value of a hedged GNMA for a given change in rates will vary with pool speed. Such changes in speed can alter the hedge ratio in several ways: by changing the value of a basis point for the hedged GNMA; by changing the value of a basis point for the cheapest GNMA being priced by the GNMA futures contract; or by causing a change in the cheapest GNMA being priced by the GNMA futures.

As a result, GNMA hedges must be carefully monitored and the GNMA market closely followed for indications that pool speed changes are occurring that might signal the need for interim adjustments to the hedge ratio.

GNMA CDR futures: basis risk

The ability to hedge with futures depends in a critical way on a relatively stable relationship between futures and cash prices. Cash prices and futures prices tend to fluctuate together so that the difference between cash and futures, referred to as the basis, is significantly less volatile than the underlying prices themselves. The extent to

continued

which the basis is not completely stable will affect the performance of the hedge. The risk involved in hedging is called the basis risk.

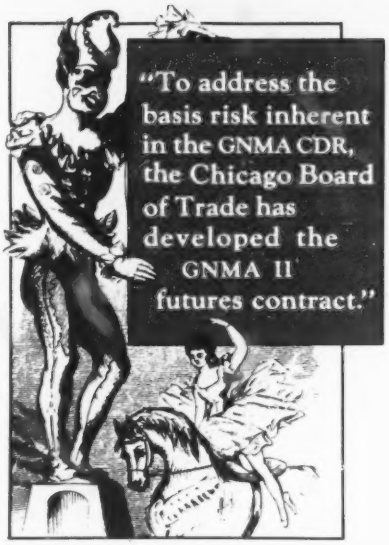
The GNMA CDR contract has been subject to periodic shifts in the basis that have heightened the basis risk and discouraged the use of GNMA CDRs as a hedging tool. In particular, GNMA CDR prices have generally been based on high coupon GNMA certificates trading at a premium. Such GNMAs tend to have high pool speeds, which in turn discourage investors from bidding the price significantly above par. Because these coupons are cheaply priced relative to current coupon GNMAs, futures buyers would be willing to pay no more than the futures equivalent of the high coupon GNMA, while futures sellers would have the incentive to sell futures until the futures price dropped to the equivalent futures price of the high coupon cash GNMA.

One problem associated with GNMA CDRs occurs when a high coupon GNMA being priced by the contract, e.g., 17s, pays down so rapidly that it becomes scarce and becomes expensive relative to a lower, but still high, coupon, e.g., 16s. In such cases there have been shifts in the cheapest GNMA that determines the price of the GNMA futures, leading to dramatic shifts in the basis that can significantly undermine a GNMA hedge program. Another factor complicating the use of the GNMA CDR as a hedge vehicle is the need to convert GNMA coupons to CDRs (the short) or CDRs to GNMAs (the long) if the futures holder goes all the way to the delivery process.

Hedging with GNMA II futures

To address the basis risk inherent in the GNMA CDR, the Chicago Board of Trade has developed the GNMA II futures contract. GNMA II is designed to price current production GNMA coupons, rather than high coupons, by the incorporation of three features.

The Delivery Window. GNMA II permits the delivery of those GNMA certificates issued at or below the current production rate in effect on the coupon



determination date, the 15th of the pre-delivery month, and for the 4½ month period preceding that date. The current production rate is the maximum GNMA coupon acceptable for GNMA II multiple issuer pools as periodically announced by GNMA. The intent of this provision is to restrict the deliverable supply to those coupons relatively close to the current production rate.

The Price Cap. The invoice price for any GNMA delivered into GNMA II is capped at 102.5. The effect is to discourage the delivery of high coupon certificates trading at a substantial premium.

Certificate Delivery. Because investors and hedgers might be unwilling, unable, or at least reluctant to make or take delivery of a CDR, they would price the CDR contract differently from the underlying GNMA certificates. By permitting delivery of actual GNMAs, the GNMA II eliminates the distortions introduced into the GNMA CDR basis by the requirement that delivery be made via a warehouse receipt (the CDR) issued by an exchange-approved originator.

The net result of these GNMA II contract features is to ensure that the futures contract will more closely track current coupon GNMAs. Moreover, the ability to make or take delivery in an efficient manner is a prerequisite to the convergence of cash and futures prices that is essential to an effective hedging vehicle. The new contract ensures that short hedges will be able to deliver current production GNMAs if necessary, and that the longs can be relatively certain of receiving the same.

Conversion factor pricing

The GNMA II futures contract also provides for conversion factor pricing. Because the contract is priced on the basis of an 8 percent coupon, the price of any other coupon that meets the delivery specifications must be adjusted accordingly. This is accomplished by multiplying the futures settlement price by a conversion factor, which is the price at which the delivered coupon yields 7.955 percent, equivalent to an 8 percent coupon at par as provided for in the GNMA II contract. The resultant price is the principal invoice price the long would pay to the short (in addition to accrued interest). Looked at another way, it is also the cash equivalent of the futures price:

Futures Price (Cash Eq.)
=
Futures Price (Contract) × Conversion Factor

It is the cash equivalent futures price that should tend to track the underlying cash GNMA (abstracting from carry considerations and expectations). Specifically, the formula indicates that changes in the futures price will tend to equal changes in the cheapest deliverable cash GNMA price divided by the factor. For coupons greater than 8 percent, the factor will exceed 1, so the futures price will tend to move by less than the underlying GNMA's price: thus the need to "ratio up" a GNMA hedge by the hedge ratio.

The GNMA II conversion factor is thus similar in concept to the conversion factor on the Chicago Board of Trade's T-Bond futures contract. Like the T-Bond contract, the GNMA II factor provides hedgers and traders alike

continued

with a convenient first approximation of the maturity factor, and in the case of hedging current production GNMAs, the hedge ratio itself.

For example, consider a mortgage banker anticipating in December 1983 a March 1984 sale of GNMA 12.5s, which in December was the current production rate. The March sale is to be hedged using GNMA II futures. From the GNMA II factor tables, the conversion factor of 1.33806 is obtained, indicating a hedge ratio of 1.34 contracts per $100,000, or 134 contracts per $10,000,000.

At the time the hedge is initiated, the GNMA 12.5s are trading at 98–19; March 1984 GNMA IIs are trading at 73–00. In March, the general level of rates has risen, and GNMA 12.5s prices have fallen to 91–29. At the same time, GNMA II futures have fallen to 68–00. The net result of the hedged transaction is shown in Chart 2.

The results in Chart 2 are hypothetical and based on a constant basis (29/32s) over the duration of the hedge. In reality, the basis is unlikely to remain unchanged. Suppose, for example, that the rise in GNMA rates was accompanied by an inversion of the yield curve (from positively to negatively sloped). In this case the basis would weaken considerably with GNMA futures moving to a premium over cash (on a cash equivalent basis), with futures going instead to 69–00 rather than 68–00. In this situation, the results of the hedge would be much different; futures would show a gain of only $536,000, resulting in a net loss on the total transaction of $132,700.

Chart 2

Date	Cash Market	Futures Market
December 1983	Originate $10,000,000 GNMA 12.5s (Price 98–19)	Sell 134 March 1984 GNMA IIs (Price 73–00)
March 1984	Sell $10,000,000 GNMA 12.5s (Price 91–29)	Buy 134 March 1984 GNMA IIs (Price 68–00)
Gain (Loss)	($668,750)	$670,000
Net	$1,250	

Chart 3

Date	Cash Market	Futures Market
December 1983	Originate $10,000,000 GNMA 12.5s (Price 98–19)	Sell 134 March 1984 GNMA IIs (Price 73–00)
March 1984	Deliver $10,000,000 GNMA 12.5s (Cash Eq. Price 97–22)	Buy 34 March 1984 GNMA IIs (Price 69–00)
Gain (Loss)	($90,625)	$136,000
Net	$45,375	

Going to delivery

To illustrate the role of the delivery process, we have chosen the GNMA sale date to coincide with the March 1984 expiration date of the GNMA II contract. In the situation above, where the hedge was adversely affected by the weakening of the basis, the banker has the option of making delivery of the GNMA 12.5s into the GNMA II contract. Because each contract calls for delivery of $100,000 principal value, the banker would have to make sure to liquidate (buy back) the extra 34 contracts prior to the actual expiration date of the contract; the $10,000,000 in GNMA 12.5s would be delivered into the remaining 100 contracts. (See Chart 3.)

This is clearly unlikely to happen. The 69–00 GNMA futures price is equivalent to a 92–10 cash price, compared with an actual cash price of 91–29. The futures are thus quite expensive to cash, presenting an arbitrage opportunity for traders to buy GNMA 12.5s and sell GNMA II futures as the delivery date approaches.

This would tend to push cash prices up and futures down to the point where few arbitrage opportunities would remain. At that point, it would be much easier to unwind the futures position and sell the GNMA 12.5s into the market. Even a hedge unwound prior to delivery may not be as effective as in the original case, of course, because some deterioration in the basis must occur due to the yield curve inversion. However, it should be clear that there will rarely be much of an incentive actually to deliver. On the other hand, it is also clear that the ability to deliver is crucial to keeping the basis relationship in line.

Futures hedging techniques have been illustrated that take into account the principal paydown features of MBSs. Moreover, the GNMA II futures contract is designed to overcome a number of technical factors that contribute to GNMA CDR basis risk and discouraged potential hedgers from using GNMA futures. More and more sophisticated programs for the evaluation and management of basis risk are being developed as well. So, despite the special considerations involved in hedging MBSs that have been discussed in this article, interest rate futures represent a valuable tool for firms involved in the origination, positioning, trading, and funding of these instruments.

Futures are not, of course, a panacea for the financial risks faced by firms with significant interest rate exposure. Rather, they are to be viewed as one of a broadening array of risk management tools, including fixed-income options (exchanged-traded and over-the-counter), forwards, standbys, swaps, and other fixed-rate credit products. □

continued from page 23

year eight, while the fraction prepaying under the CPP model remains constant. Consequently, the cashflow under the FHA model is lower than the CPP cashflow initially, and the outstanding balance is higher initially. With other mortgage mortality experience or at other points in the pool life cycle, this relationship may not hold.

Although the CPP model gives a slightly different picture, the result would appear to be within the limits of the accuracy of the underlying FHA mortality data. In model building, it is easy to lose sight of the inaccuracy of assumptions. The FHA mortality table is not a "perfect" measure of any actual pool's prior history; it is an aggregate of historical data of different mortgage interest rates at different origination dates. The mathematics of the model treat this data as if it were perfect, and would allow the computation of cashflows, prices, and yields of unlimited accuracy. The implicit errors in the assumptions do not allow extreme accuracy; precise computations beyond the precision of the data are all fantasy.

Figure 14 plots the equivalence between the percent FHA experience and CPP for various yields. In other words, 100 percent FHA experience is equivalent to a 5.4 percent CPP at a 6 percent yield, but is equivalent to a 4.8 percent CPP at an 18 percent yield. If the FHA method and CPP method were exactly equivalent, this plot would be a series of perpendicular vertical lines parallel to the 0 percent line. The close equivalence is evidenced by how nearly straight and vertical they actually are.

Figure 14:
Equivalent CPPs for Various FHA Experience Percents

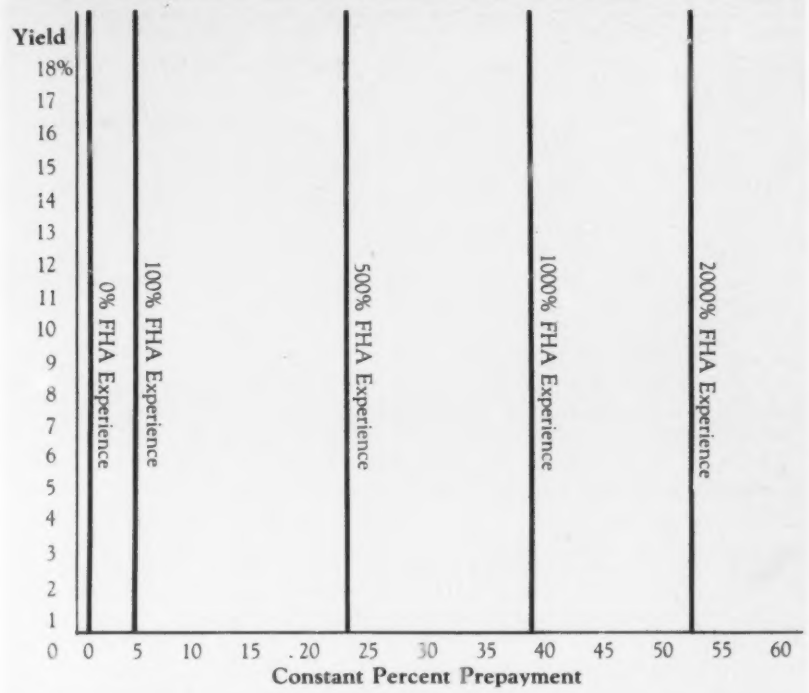


Figure 15:
Price given Yield under Model 1— 30 Years, no Prepayment

	Net Pool Rate (Gross Rate – ½% Service)		
Yield	8%	12%	16%
6%	122.29	171.58	224.23
7	110.06	154.48	201.92
8	99.67	139.94	182.95
9	90.79	127.50	166.72
10	83.15	116.81	152.76
11	76.54	107.56	140.68
12	70.80	99.51	130.17
13	65.77	92.46	120.97
14	61.35	86.27	112.87
15	57.44	80.79	105.71
16	53.97	75.92	99.35
17	50.87	71.57	93.66
18	48.09	67.66	88.56

Figure 16:
Price given Yield under Model 2—30 Years Prepaid in 12

	Net Pool Rate (Gross Rate – ½% Service)		
Yield	8%	12%	16%
6%	115.87	149.47	193.82
7	107.37	139.04	171.51
8	99.67	129.58	160.30
9	92.70	120.97	150.09
10	86.37	113.14	140.77
11	80.63	106.01	132.27
12	75.41	99.51	124.49
13	70.66	93.57	117.37
14	66.33	88.14	110.84
15	62.38	83.18	104.85
16	58.78	78.63	99.35
17	55.48	74.45	94.28
18	52.46	70.61	89.62

Trading under the models: yield and price comparisons

The ultimate point of any of these models is to develop fair trading relationships for buyers and sellers. For the sake of simplicity, let us investigate the three situations we looked at previously: 8 percent, 12 percent, and 16 percent 30-year securities. Figure 15 shows the price given the yield for a range of rates. Because GNMA yields and prices are being related, the rate shown is the net interest rate; the gross interest rate of the underlying mortgage is .5 percent higher because of service. In addition, there is assumed to be a 45-day interval to the receipt of the first payment, consistent with GNMA I.

It is clear from the figures that model 2 imputes a faster payoff than model 1. At a fixed discount price, the yield resulting from model 2 is better than the yield from model 1, but at a premium price the opposite would be true. Models 3 and 4 both offer the advantage of representing a whole range of

continued

Figure 17:
Price given Yield under Model 3 FHA Experience for a Pool at 8% Net Rate

Yield	1000% FHA	200% FHA	100% FHA	0% FHA
6.00	104.60	111.14	114.84	122.29
7.00	102.09	105.14	106.80	110.06
8.00	99.67	99.67	99.67	99.67
9.00	97.33	94.67	93.32	90.79
10.00	95.08	90.08	87.65	83.15
11.00	92.90	85.85	82.54	76.54
12.00	90.79	81.95	77.94	70.80
13.00	88.75	78.35	73.77	65.77
14.00	86.78	75.00	69.98	61.35
15.00	84.87	71.89	66.51	57.44
16.00	83.03	69.00	63.34	53.97
17.00	81.24	66.30	60.43	50.87
18.00	79.52	63.77	57.75	48.09

Figure 18:
Price given Yield under Model 3 FHA Experience for a Pool at 12% Net Rate

Yield	1000% FHA	200% FHA	100% FHA	0% FHA
6.00	114.41	134.88	146.86	171.58
7.00	111.70	127.58	136.50	154.48
8.00	109.09	120.94	127.33	139.94
9.00	106.57	114.88	119.19	127.50
10.00	104.14	109.32	111.91	116.81
11.00	101.78	104.21	105.39	107.56
12.00	99.51	99.51	99.51	99.51
13.00	97.31	95.16	94.19	92.46
14.00	95.18	91.13	89.36	86.27
15.00	93.12	87.39	84.95	80.79
16.00	91.13	83.90	80.92	75.92
17.00	89.20	80.65	77.23	71.57
18.00	87.33	77.61	73.83	67.66

Figure 19:
Price given Yield under Model 3 FHA Experience for a Pool at 16% Net Rate

Yield	1000% FHA	200% FHA	100% FHA	0% FHA
6.00	124.28	159.23	180.19	224.23
7.00	121.38	150.63	167.44	201.92
8.00	118.58	142.81	156.17	182.94
9.00	115.88	135.68	146.17	166.72
10.00	113.28	129.15	137.25	152.76
11.00	110.76	123.15	129.25	140.68
12.00	108.32	117.63	122.05	130.17
13.00	105.97	112.53	115.55	120.97
14.00	103.69	107.81	109.64	112.87
15.00	101.48	103.43	104.26	105.71
16.00	99.35	99.35	99.35	99.35
17.00	97.28	95.54	94.84	93.66
18.00	95.28	91.99	90.69	88.56

Figure 20:
Price given Yield under Model 4 CPP for a Pool at 8% Net Rate

Pool Yield	Anticipated Constant Percent Prepayment 25.00%	10.00%	5.00%	0.00%
6.000	105.983	111.156	115.138	122.300
7.000	102.731	105.120	106.912	110.069
8.000	99.668	99.669	99.671	99.676
9.000	96.778	94.727	93.266	90.791
10.000	94.047	90.230	87.573	83.152
11.000	91.463	86.123	82.487	76.546
12.000	89.015	82.359	77.925	70.800
13.000	86.691	78.899	73.814	64.773
14.000	84.483	75.709	70.094	61.353
15.000	82.383	72.760	66.715	57.445
16.000	80.382	70.025	63.634	53.972
17.000	78.474	67.484	60.816	50.871
18.000	76.653	65.116	58.229	48.089

Figure 21:
Price given Yield under Model 4 CPP for a Pool at 8% Net Rate

Pool Yield	Anticipated Constant Percent Prepayment 25.00%	10.00%	5.00%	0.00%
6.000	118.750	135.074	147.955	171.587
7.000	115.054	127.588	137.205	154.481
8.000	111.576	120.841	127.761	139.940
9.000	108.298	114.736	119.422	127.507
10.000	105.204	109.190	112.021	116.813
11.000	102.278	104.134	105.421	107.561
12.000	99.507	99.508	99.508	99.510
13.000	96.879	95.261	94.188	92.467
14.000	94.385	91.352	89.380	86.270
15.000	92.013	87.742	85.019	80.790
16.000	89.755	84.399	81.047	75.919
17.000	87.603	81.295	77.418	71.568
18.000	85.550	78.406	74.089	67.665

Figure 22:
Price given Yield under Model 4 CPP for a Pool at 16% Net Rate

Pool Yield	Anticipated Constant Percent Prepayment 25.00%	10.00%	5.00%	0.00%
6.000	131.674	159.724	182.254	224.237
7.000	127.545	150.767	168.886	201.921
8.000	123.662	142.706	157.156	182.948
9.000	120.004	135.420	146.808	166.721
10.000	116.553	128.809	137.634	152.761
11.000	113.291	122.788	129.461	140.681
12.000	110.203	117.285	122.145	130.168
13.000	107.277	112.238	115.568	120.968
14.000	104.499	107.595	109.630	112.873
15.000	101.859	103.311	104.246	105.713
16.000	99.346	99.347	99.347	99.348
17.000	96.953	95.669	94.872	93.662
18.000	94.670	92.247	90.772	88.559

pool behavior and thus can be applied more precisely than models 1 and 2. In addition, model 4 offers the use of a single parameter that is appealing.

Best model: CPP

Constant Percentage Prepayment offers a new and attractive model for pricing GNMA securities. It gives a much more realistic method of establishing the price of the pool than the prepaid at a specific period assumption (model 2) but is more straightforward and easier to envision than the FHA experience assumption (model 3).

The FHA experience assumption model (model 3) suffers from a number of well-known deficiencies. First, FHA has aggregated all of its experience into a single mortgage mortality table. This table joins together new and old mortgages at high and low rates. Why should any particular pool follow this average?

Recently new types of pools have arisen. These include pools originated by the Federal Home Loan Mortgage Corporation and the Federal National Mortgage Association. They lack even the homogeneity of GNMA II. They include a pooling of different mortgage interest rates, service interest rates, and original terms. While it is conceptually possible to apply the FHA experience concept, to do so encounters practical difficulties and may develop wrong impressions. The CPP methodology handles these new pools in stride.

Using the CPP model can revolutionize the pricing of GNMA pools and other mortgage-backed securities. □

Editor's Note: To assist in the use of this type of pricing, Financial Publishing Company is preparing three new publications:

1. *Financial Constant Percent Prepayment Mortgage Yield Table.*
2. *Financial Constant Percent Prepayment GNMA Yield Table.*
3. *Financial Constant Percent Prepayment FHLMC Yield Table.*

In addition, Financial Publishing has expanded the coverage of the GNMA Report to include statistical data involving Constant Percent Prepayment as well as the current statistics on FHA experience.

As 1984 gets under way, many questions arise about the role of housing in this the second year of the recovery cycle. 1983 was a strong year for housing. In fact, the housing sector of the economy was responsible for a large part of the growth in the Gross National Product (GNP). The housing recovery actually began in the latter half of 1982 as rates fell and lenders were inundated with borrowers seeking to refinance their high-rate mortgages. As 1983 unfolded and the refinancing activity died down, originations of new loans soared. Housing starts, new home sales, and existing home sales shook off the recession of 1981 and 1982, expanding by 50 percent or more from the 1982 levels.

Housing starts for 1983 will finish the year at about 1.7 million units; existing home sales at about 2.7 million units; and new home sales at about 630,000 units. Our forecast for the housing market of 1984 is a relatively stable one. We feel housing starts will increase to 1.8 million units, with similar increases for existing and new homes sales. Long-term mortgage yields will move down slightly in the first two quarters of 1984 to a low point of 11.5 percent. In the third and fourth quarters we will see a drift upward in mortgage rates to the 12.5 to 13 percent range. The increasingly popular adjustable rate mortgage (ARM) could reach a low first-year rate of 10.5 percent in the first half of 1984.

Traditionally, in the second year of a recovery, housing exceeds its performance of the first year with more starts and more sales. There are many reasons why this will not occur in 1984.

Perhaps the most pervasive and the least readily evident are the fundamental changes that have taken place in the mortgage and housing markets. A direct result of deregulation has been the positioning of the mortgage credit markets in direct competition with Treasury offerings and other long-term fixed investments. Portfolio lenders can no longer function in this newly competitive market. In order to minimize interest rate risk and ensure a steady supply of funds, traditional portfolio lenders are functioning as mortgage bankers always have—they are selling the loans they originate to investors.

By eliminating the shelter that mortgage credit markets have always enjoyed, deregulation has forced these markets to face the same problems as other credit market participants, not the least of these being fiscal policy and inflation fears. Over the past year, these two factors have been integral in influencing the course of interest rates. These factors will figure prominently in investors' minds in 1984 as well.

The ramifications for borrowers are just as revolutionary as they are for lenders. Few households can afford the type of housing they expected to be able to purchase because of the new mortgage market climate. Borrowers are learning to accept much smaller housing units and are willing to accept ARMs simply because it is the only way to qualify for a loan. With little movement in mortgage rates expected in 1984, borrowers will become used to the 12-13 percent range of rates and make the budgetary adjustments necessary to compete in the market.

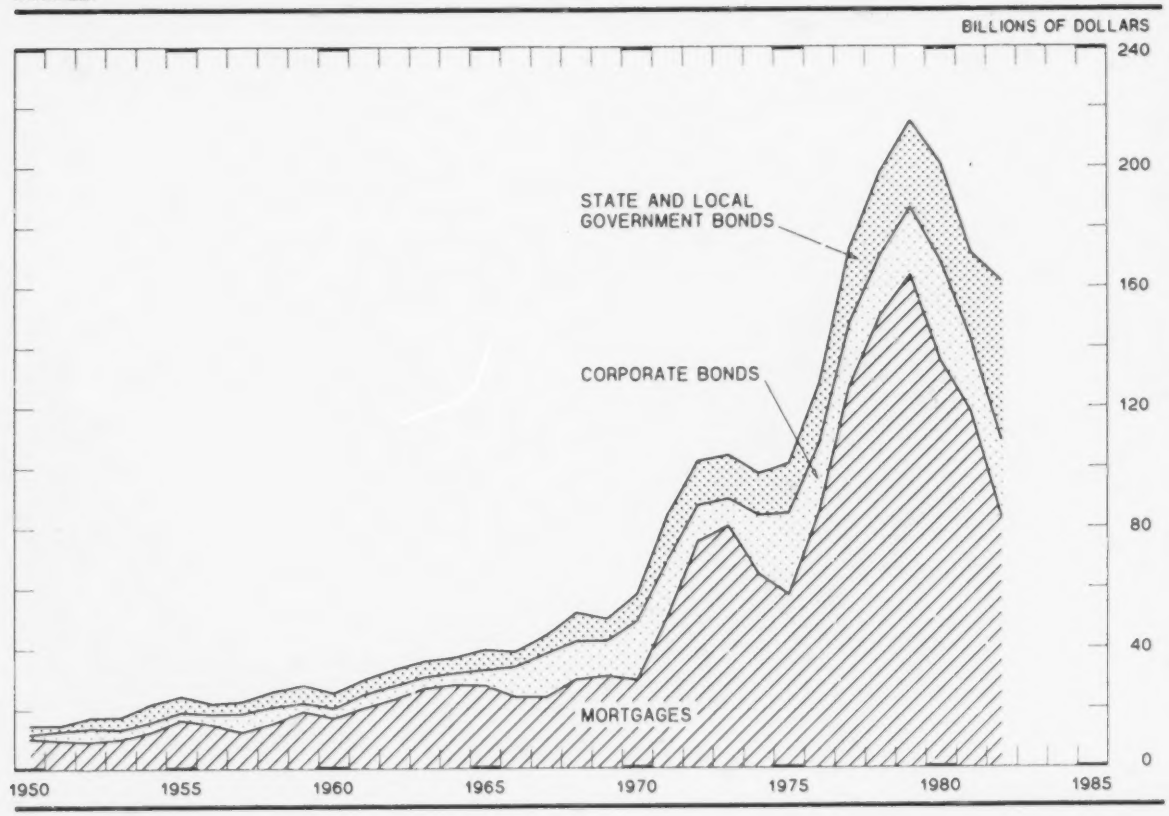
1984 will be a year of adjustment for housing. Against the backdrop of stability, borrowers will learn to accept the high rates now inherent in the market and the wide variety of instruments now available to choose from. Lenders can consolidate their strong positions coming out of 1983 and begin to explore new markets and opportunities as they too become seasoned players in the newly competitive markets.

Deborah Whiteside
Assistant Economist

LONG-TERM BORROWING

PRIVATE DOMESTIC NONFINANCIAL SECTORS

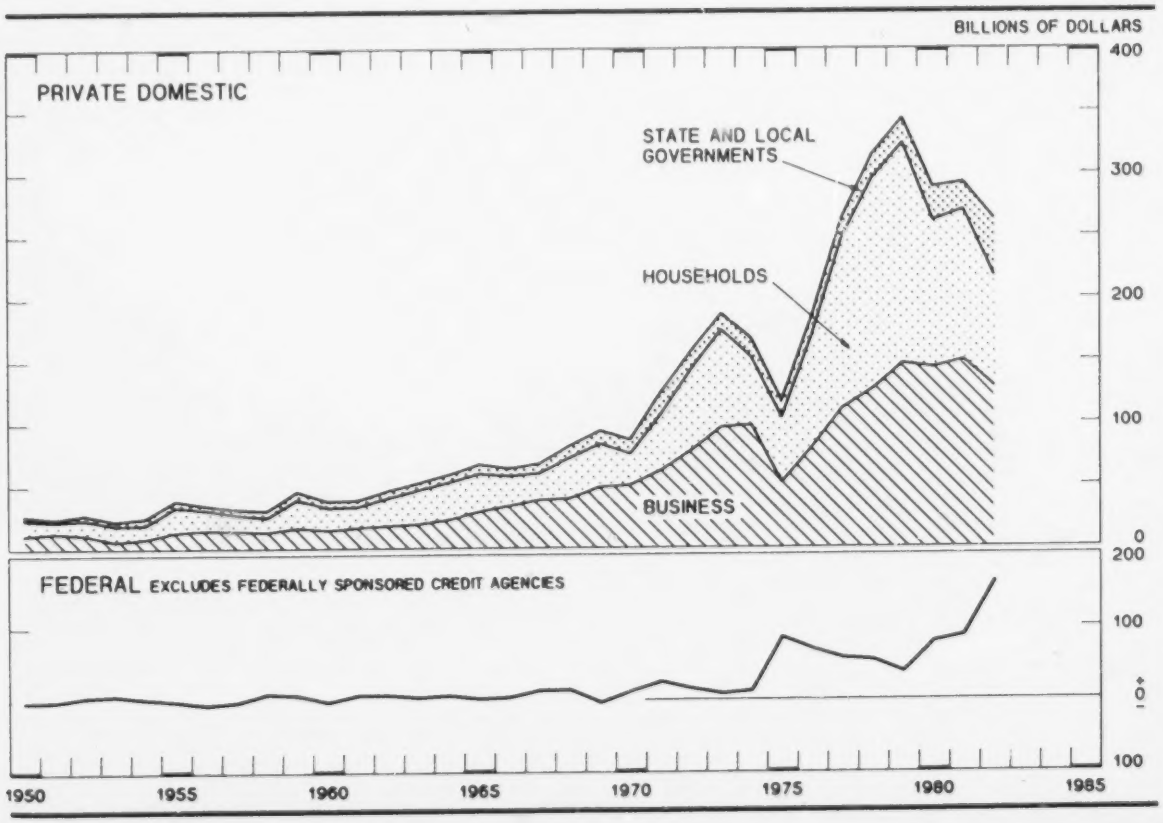
ANNUALLY



NET FUNDS RAISED

MAJOR NONFINANCIAL SECTORS

ANNUALLY



Source : Federal Reserve Board

MORTGAGE MARKET TRENDS—FEBRUARY 1984

RESIDENTIAL STRUCTURES, BY UNIT TYPE

(Units in thousands)

Year and Month	PERMITS 16,000 ISSUING PLACES						HOUSING STARTS					
	Actual			Seasonally Adjusted Annual Rate			Actual			Seasonally Adjusted Annual Rate		
	Total	1-4 Units	5+ Units	Total	1-4 Units	5+ Units	Total	1-4 Units	5+ Units	Total	1-4 Units	5+ Units
1982												
AUG	80	54	26	888	580	308	96	70	26	1,046	738	308
SEP	100	61	39	1,003	657	346	105	71	34	1,134	773	361
OCT	100	63	37	1,172	737	435	111	73	38	1,142	782	360
NOV	100	64	36	1,284	843	441	109	73	36	1,361	947	414
DEC	76	50	26	1,168	810	358	83	57	26	1,280	921	359
1983												
JAN	85	56	29	1,447	1,986	461	92	64	29	1,707	1,239	468
FEB	93	56	36	1,479	949	530	96	66	30	1,784	1,220	564
MAR	135	91	44	1,467	985	482	135	95	40	1,605	1,108	497
APR	148	93	45	1,536	982	554	136	103	33	1,506	1,118	388
MAY	149	104	45	1,635	1,076	559	175	124	51	1,807	1,279	528
JUN	171	114	57	1,761	1,160	601	173	125	48	1,736	1,250	486
JUL	147	92	55	1,782	1,057	725	162	113	49	1,804	1,167	637
AUG	153	97	56	1,652	1,007	645	177	121	56	1,904	1,245	659
SEP	148	90	58	1,506	967	539	155	108	47	1,664	1,148	516
OCT	140	87	53	1,630	1,022	608	159	102	57	1,650	1,103	547
NOV	125p	79p	46p	1,650p	1,057p	593p	137p	94p	43p	1,756p	1,226p	530p
11 months												
1983	1,484	959	524				1,597	1,115	482			
1982	894	571	324				983	687	296			
1981	711	621	90				1,022	760	262			
1980	1,083	759	325				1,194	894	300			

VALUE OF NEW CONSTRUCTION PUT IN PLACE

(Dollars in millions)

Year and Month	Seasonally Adjusted Annual Rate			
	Total	1 Unit	2+ Units	Non-Res.
1982				
AUG	117,960	35,852	16,774	65,334
SEP	118,274	36,309	16,728	65,237
OCT	118,591	36,895	16,720	64,976
NOV	121,864	38,868	16,902	66,094
DEC	122,957	41,495	17,113	64,349
1983				
JAN	128,257	45,650	17,275	65,332
FEB	131,430	49,869	18,907	62,654
MAR	133,662	53,374	18,958	61,330
APR	134,876	57,134	20,130	57,612
MAY	139,801	61,926	20,300	57,575
JUN	147,929	65,797	22,124	60,008
JUL	152,028	67,598	25,[illegible]32	59,348
AUG	157,313	68,746	26,025	62,542
SEP	157,582	68,337	26,614	62,631
OCT	151,110	66,374	25,807	58,929
NOV	153,041p	65,283p	25,832p	61,926p

HOUSE SALES

(Units in thousands)

Year and Month	EXISTING HOUSES[1]	NEW HOUSES		
		Sold	Available For Sale	Months Supply at Current Rate
1982				
AUG	186	34	247	7.5
SEP	168	40	248	6.9
OCT	173	41	245	6.1
NOV	167	39	250	5.5
DEC	148	33	255	5.8
1983				
JAN	155	44	256	5.2
FEB	163	46	253	5.4
MAR	237	57	259	5.2
APR	236	59	264	5.1
MAY	259	64	271	4.9
JUN	283	59	283	5.4
JUL	260	51	288	5.9
AUG	280	50	296	6.5
SEP	240	49	299	6.6
OCT	224	52	301	5.8
NOV	204p	46p	308p	5.9p
11 months				
1983	2,541	577		
1982	1,794	380		
1981	2,224	402		
1980	2,694	502		

RESIDENTIAL STRUCTURES, BY REGION

(units in thousands)

Year and Month	PERMITS 16,000 ISSUING PLACES								STARTS							
	Actual				Seasonally Adjusted Annual Rate				Actual				Seasonally Adjusted Annual Rate			
	North East	North Central	South	West	North East	North Central	South	West	North East	North Central	South	West	North East	North Central	South	West
1982																
JUL	9	12	45	24	101	140	555	266	11	15	62	18	104	159	725	197
AUG	13	10	42	17	113	106	485	184	12	16	49	16	119	164	567	196
SEP	12	15	51	21	114	131	530	228	16	15	54	20	138	141	629	226
OCT	13	14	51	22	135	139	635	263	10	20	58	23	108	156	628	250
NOV	14	13	56	17	127	131	649	285	14	15	63	17	160	183	773	245
DEC	8	7	41	21	112	148	738	307	8	7	47	21	122	155	714	289
1983																
JAN	6	6	52	21	152	188	764	343	5	6	63	18	164	231	992	307
FEB	8	6	57	22	185	163	794	337	7	8	58	24	270	263	900	351
MAR	11	14	82	28	136	173	835	323	13	13	80	29	210	196	855	344
APR	14	16	74	34	165	172	832	367	14	18	75	30	175	192	804	335
MAY	15	20	77	38	148	194	885	405	17	25	93	40	164	229	1,008	406
JUN	19	21	86	45	183	201	930	447	18	25	89	42	171	214	932	419
JUL	16	17	78	36	181	166	1,004	411	18	23	82	39	164	233	985	422
AUG	18	21	77	37	182	202	870	398	22	25	92	38	190	246	1,024	444
SEP	18	21	73	36	176	177	765	388	15	23	83	34	132	225	932	375
OCT	15	20	72	33	159	195	878	398	16	23	87	33	156	195	941	358
NOV	12p	16p	68p	29p	148p	193p	899p	410p	14p	18p	75p	30p	161p	211p	948p	435p
11 months																
1983	152	178	796	359					159	207	877	357				
1982	101	111	486	196					107	141	550	183				
1981	103	125	449	234					106	157	530	225				
1980	106	163	513	294					114	203	599	282				

CONSTRUCTION STATUS

(units in thousands)

Year and Month	UNDER CONSTRUCTION			COMPLETIONS		
	Total	1-4 Units	5+ Units	Total	1-4 Units	5+ Units
1982						
JUL	690	442	248	85	64	21
AUG	690	442	248	91	66	25
SEP	713	450	263	84	63	21
OCT	717	448	269	102	71	30
NOV	732	453	279	94	68	26
DEC	718	439	279	96	68	28
1983						
JAN	728	442	286	81	60	21
FEB	747	456	291	78	53	25
MAR	835	517	318	91	69	22
APR	832	516	316	90	69	21
MAY	901	565	336	106	75	31
JUN	951	597	354	123	93	30
JUL	988	615	373	120	91	29
AUG	1,010	629	381	154	106	48
SEP	1,028	635	393	133	99	34
OCT	1,033p	627p	406p	152p	109p	43p
NOV	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
11 months						
1983				n.a.	n.a.	n.a.
1982				909	661	267
1981				1,151	848	304
1980				1,369	971	398

INTEREST RATES AND YIELDS

Year and Month	1-4 UNIT MORTGAGES					APARTMENTS[3]	CONSTRUCTION LOANS[3] ALL TYPES	FNMA		GNMA Current Securities Yield[4]	SELECTED SECURITIES				SPREADS (Basis Points)	
	FHA Opinion Survey			FHLBB Survey				Mandatory Delivery Yields			Aaa Utility New Issue	U.S. Gov't.		Prime Commercial Paper 90-119 Days	FHA New Minus Aaa Utility	GNMA minus 10-yr Gov't.
	FHA New[1]	Conventional		Conventional				ARM (5 yr Treas)	Conv			10-yr	26-wk			
		New	Existing	New	Existing											
1982																
AUG	14.61	15.40	15.45	15.71	15.63	15.62	17.19		15.500	14.31	13.95	13.06	10.105	10.15	66	125
SEP	14.03	15.05	15.05	14.99	15.30	15.37			14.750	13.51	13.50	12.34	9.539	10.36	53	117
OCT	12.99	13.95	13.95	14.41	14.95	14.13		13.097	14.000	12.86	12.20	10.91	8.299	9.20	79	195
NOV	12.82	13.80	13.80	13.81	14.29	13.88	15.14	12.605	13.375	11.85	11.76	10.55	8.319	8.69	106	130
DEC	12.80	13.62	13.64	13.70	13.95	13.37		12.346	13.000	12.00	11.84	10.54	8.225	8.51	96	146
1983																
JAN	12.87	13.44	13.45	13.49	13.54	13.88		12.097	13.000	11.89	12.05	10.46	7.898	8.17	82	143
FEB	12.65	13.18	13.19	13.16	13.40	13.75		12.376	12.875	12.20	12.08	10.72	8.233	8.34	110	148
MAR	12.68	13.17	12.85	13.51	13.04	13.63	12.56	11.916	12.920	11.82	11.70	10.51	8.325	8.52	98	131
APR	12.50	13.02	13.07	12.42	12.88	13.50		11.955	12.775	11.78	11.41	10.40	8.343	8.53	109	138
MAY	12.41	13.09	13.09	12.67	12.82	13.63	11.72	11.470	12.583	11.54	11.32	10.38	8.20	8.33	109	116
JUN	12.96	13.37	13.38	12.36	12.67	14.00		12.480	13.163	12.03	11.87	10.85	8.89	9.00	109	158
JUL	14.23	14.00	14.01	12.50	12.63	14.50		12.978	13.638	12.80	12.32	11.38	9.26	9.25	191	142
AUG	13.78	13.90	13.92	12.38	12.72	14.38	12.99	13.195	13.688	13.22	12.25	11.85	9.51	9.54	153	137
SEP	13.55	13.60	13.62	12.54	12.85	14.24		12.863	13.213	12.78	12.53	11.65	9.15	9.24	102	113
OCT	13.23	13.52	13.53	12.25	12.63	14.11		12.575	12.963	12.58	12.43	11.54	8.81	8.99	80	104
NOV	13.23	13.48	13.49	12.27	12.57	14.15	n.a.	12.787	13.012	12.62	n.a.	11.69	8.93	9.10	n.a.	93

LONG-TERM MORTGAGE LOANS CLOSED

(Dollars in Millions)

Year and Month	BY TYPE OF INSTITUTION					BY TYPE OF UNIT, AND INSTITUTION													
						1-4 Units					5+ Units					Nonresidental			
	Total	Mtg. Bankers	S&Ls	Banks[a]	Life Cos.	Total	Mtg. Bankers	S&Ls	Banks[a]	Life Cos.	Total	Mtg. Bankers	S&Ls	Banks	Life Cos.	Total	Mtg. Bankers	S&Ls	Banks[a]	Life Cos.
1982																			
JUN	10,882	2,530	4,041	3,826	485	7,463	2,160	3,258	1,995	50	637	130	271	221	13	2,782	240	512	1,608	422
JUL	10,164	2,230	3,427	3,661	846	6,981	1,950	2,922	2,049	60	481	50	206	177	48	2,702	230	299	1,435	738
AUG	9,848	2,450	3,601	3,251	546	7,042	2,130	2,909	1,958	45	573	70	280	210	13	2,233	250	412	1,083	488
SEP	10,467	2,280	3,858	3,855	474	7,541	2,090	3,130	2,276	45	593	50	295	226	22	2,333	140	433	1,353	407
OCT	10,724	2,850	3,529	3,764	581	7,447	2,290	2,817	2,296	44	761	320	216	210	15	2,516	240	496	1,258	522
NOV	12,230	3,240	4,026	4,458	506	8,907	2,770	3,148	2,935	54	682	200	337	107	38	2,611	270	541	1,416	414
DEC	18,448	4,720	6,443	5,724	1,561	12,761	4,210	4,778	3,705	68	1,125	150	605	297	73	3,562	360	1,060	1,722	1,420
1983																			
JAN	15,616	4,710	4,755	5,371	780	10,695	3,880	3,621	3,146	48	1,532	650	529	312	41	3,389	180	605	1,913	691
FEB	16,396	4,450	5,090	5,987	869	11,562	3,980	3,946	3,593	43	1,084	170	383	453	78	3,750	300	761	1,941	748
MAR	21,468	5,910	7,577	6,965	1,016	15,824	5,050	5,877	4,839	58	1,113	70	677	285	81	4,531	790	1,023	1,841	877
APR	20,459	6,080	7,942	5,681	756	14,661	4,790	6,292	3,523	56	1,884	890	656	288	50	3,910	400	990	1,870	650
MAY	22,111	5,590	8,348	7,354	819	15,670	4,740	6,903	3,970	57	1,397	300	549	490	58	5,044	550	896	2,894	704
JUN	29,936	7,120	10,936	10,354	1,526	20,993	5,950	8,683	6,268	92	2,621	910	916	645	150	6,322	260	1,337	3,441	1,284
JUL	24,310	5,810	10,275	7,230	995	18,650	5,450	8,297	4,839	64	1,191	30	759	331	71	4,469	330	1,219	2,060	860
AUG	28,942	5,730	11,291	10,042	1,879	20,755	5,000	9,197	6,501	57	1,725	220	740	523	242	6,462	510	1,354	3,018	1,580
SEP	24,531	4,670	10,331	8,115	1,415	16,815	3,660	8,127	4,979	49	1,569	220	774	439	136	5,947	590	1,430	2,697	1,230
OCT	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

LONG-TERM COMMITMENT ACTIVITY

(Dollars in Millions)

Year and Month	OUTSTANDING					ISSUED DURING MONTH				
	Total	Mtg. Bankers	S&Ls	Banks[a]	Life Cos.	Total	Mtg. Bankers	S&Ls	Banks[a]	Life Cos.
1982										
MAY	48,565	8,260	17,362	12,345	10,598	8,890	3,380	3,350	1,627	533
JUN	48,130	8,100	17,327	12,543	10,160	8,105	2,560	3,597	1,648	300
JUL	48,616	8,500	16,951	13,436	9,729	8,461	2,700	3,537	1,679	545
AUG	49,495	9,050	17,748	13,192	9,505	8,946	3,050	3,847	1,615	434
SEP	50,444	9,800	18,241	13,108	9,295	10,089	4,240	3,885	1,466	495
OCT	53,690	12,570	19,328	12,512	9,280	13,094	6,740	4,024	1,620	710
NOV	59,572	15,660	20,785	13,457	9,670	15,456	7,290	5,017	1,819	1,330
DEC	61,755	16,320	21,548	14,267	9,620	15,487	6,110	6,082	1,991	1,304
1983										
JAN	62,967	16,520	22,945	13,802	9,700	15,693	7,010	5,555	1,928	1,200
FEB	69,199	18,840	25,677	14,965	9,717	16,887	6,460	7,271	2,086	1,070
MAR	72,413	18,500	28,846	15,217	9,850	22,322	7,660	10,291	3,073	1,298
APR	76,041	19,550	31,850	14,311	10,330	22,049	7,460	9,730	3,265	1,594
MAY	78,413	17,740	33,906	16,242	10,531	23,141	7,470	10,622	3,744	1,305
JUN	81,936	19,560	35,319	15,910	11,147	26,002	7,330	12,555	4,011	2,106
JUL	78,741	17,090	36,852	12,651	12,148	26,571	6,840	14,092	3,475	2,164
AUG	79,490	14,990	38,590	13,770	12,140	24,126	6,160	12,668	3,653	1,645
SEP	78,074	14,050	38,562	13,495	11,967	20,644	4,900	10,895	3,454	1,395
OCT	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

MORTGAGE INSURANCE

(Units in Thousands, Dollars in Millions)

Year and Month	APPLICATIONS RECEIVED UNITS			INSURED							
				Total		FHA (203)		VA		Private	
	Total	FHA/VA	Private	Units	Amt.	Units	Amt.	Units	Amt.	Units	Amt.
1982											
MAY	67	31	36	43	2,222	8	235	6	328	29	1,559
JUN	83	40	43	50	2,743	9	408	8	443	33	1,892
JUL	84	38	46	52	2,657	9	375	9	482	34	1,830
AUG	82	36	46	54	2,997	8	352	10	573	36	2,072
SEP	91	47	44	60	3,248	11	462	13	743	36	2,043
OCT	103	59	44	52	2,826	10	425	6	385	36	2,016
NOV	104	60	44	53	2,920	11	498	8	455	34	1,967
DEC	175	125	50	63	3,471	16	703	9	564	38	2,204
1983											
JAN	137	98	39	54	3,201	14	637	10	630	30	1,934
FEB	138	96	42	62	3,607	17	795	15	961	30	1,851
MAR	176	113	63	87	5,003	31	1,508	20	1,243	36	2,252
APR	180	117	63	86	5,483	34	1,867	19	1,190	38	2,426
MAY	165	91	74	101	5,959	24	1,152	30	1,911	47	2,896
JUN	233	145	85	139	8,015	60	2,938	24	1,541	55	3,536
JUL	182	102	80	115	6,863	38	1,854	20	1,224	57	3,785
AUG	205	106	99	139	8,665	31	1,641	35	2,193	73	4,831
SEP	152	66	86	161	9,702	56	2,922	33	2,092	72	4,688
OCT	141	58	83	124	7,730	25	1,340	30	1,934	69	4,456

SECONDARY MARKET ACTIVITY

(Dollars in Millions)

Year and Month	FNMA				FHLMC				GNMA	
	Portfolio		Mortgage Backed Securities		Comm. to Sell	Comm. to Buy	Mtg. Purc.	Sold	Pass-Through Securities	
	Comm.	Purc.	Comm.	Issued					Applications	Issued
1982										
MAR	1,880	604	224	1,071	2,607	2,523	1,481	1,564	2,223	1,335
APR	2,482	755	428	662	2,726	2,824	2,144	2,176	1,219	835
MAY	1,550	1,006	467	802	1,699	2,692	1,214	1,194	1,812	1,194
JUN	1,582	1,223	2,696	337	3,207	3,166	1,581	1,564	2,800	1,530
JUL	2,016	1,354	670	1,858	2,201	2,181	2,236	2,205	2,116	1,011
AUG	1,820	1,931	1,694	789	2,906	2,768	2,529	2,618	2,850	1,383
SEP	1,482	1,670	1,503	1,008	2,980	2,892	1,798	1,924	16,429	110
OCT	1,426	1,449	1,741	2,167	2,467	2,506	2,000	2,200	1,297	1,441
NOV	2,795	1,681	2,281	1,838	1,818	1,714	1,917	2,177	1,692	1,564
DEC	3,055	2,495	1,415	2,436	897	1,068	3,916	3,804	3,093	2,330
1983										
JAN	2,006	2,045	1,409	1,082	2,004	2,059	1,479	1,641	4,593	2,657
FEB	784	1,594	1,496	1,213	847	868	1,688	1,756	4,316	3,573
MAR	1,184	1,433	2,237	1,684	1,410	1,438	2,849	2,469	9,487	5,292
APR	1,023	1,004	1,055	1,152	2,149	3,079	1,807	1,525	6,423	4,359
MAY	1,534	1,579	1,251	1,160	2,881	2,334	2,439	1,408	6,657	4,654
JUN	2,506	1,333	1,713	1,097	2,319	2,358	1,494	1,244	6,444	5,246
JUL	1,198	1,358	1,618	1,651	4,621	4,671	1,523	1,491	5,466	4,363
AUG	1,282	1,213	820	1,052	5,592	6,367	1,621	1,585	7,976	5,941
SEP	2,739	1,203	2,181	1,018	3,183	3,283	2,263	1,555	6,744	4,200
OCT	1,882	1,244	664	750	2,382	2,598	2,886	2,758	3,891	3,808

MORTGAGE BANKERS CONSTRUCTION AND LAND LOAN ACTIVITY

(Dollars in Millions)

Year and Month	DISBURSEMENTS DURING MONTH					OUTSTANDING COMMITMENTS TO BORROWERS			
	Construction				Land Loans				
	Total	1-4 Units	5+ Units	Non-res.		Total	1-4 Units	5+ Units	Non-res.
MAR	90	50	10	30	50	480	90	60	330
APR	240	50	50	140	70	490	90	140	260
MAY	90	30	20	40	50	620	80	160	380
JUN	120	40	30	50	80	700	80	300	320
JUL	110	40	20	50	40	430	50	250	130
AUG	100	40	20	40	60	540	90	200	250
SEP	110	40	20	50	40	320	80	130	110
OCT	130	70	20	40	30	230	100	110	20
NOV	130	80	10	40	30	430	130	220	80
DEC	170	70	30	70	60	490	120	110	260
1983									
JAN	100	50	20	30	60	280	120	30	130
FEB	150	60	30	60	60	250	110	60	110
MAR	170	80	20	70	50	540	180	190	170
APR	150	50	10	70	60	290	150	60	80
MAY	320	160	40	120	160	470	130	80	260
JUN	430	170	60	200	120	500	130	90	280
JUL	120	60	10	50	40	180	80	30	70
AUG	110	70	10	30	80	200	120	20	60
SEP	160	70	20	70	50	440	100	60	280
OCT	120p	50p	20p	50p	90p	130p	80p	130p	120p

n.a.—Not available; p—Preliminary.

[1]From the National Association of Realtors' "Existing Home Sales" series.

[2]Reflects cumulative total through the latest month for each column.

[3]Secondary market gross yields.

[4]Federal Home Loan Mortgage Corp. Existing construction only.

[5]Federal Reserve's weighted average interest rate for Commercial Banks.

[6]Weighted average gross yields for accepted bids.

[7]Survey of three New York security dealers. Securities for immediate delivery.

[8]Mutual Savings Banks and Commercial Banks.

Sources: American Council of Life Insurance, Board of Governors of the Federal Reserve System, Bureau of the Census, Citicorp Real Estate Inc., Department of Housing and Urban Development, Federal Home Loan Bank Board, Federal Home Loan Mortgage Corporation, Federal National Mortgage Association, Government National Mortgage Association, Mortgage Bankers Association of America, National Association of Mutual Savings Banks, National Association of Realtors, Veterans Administration.

MORTGAGE BANKING ACTIVITY

LONG-TERM MORTGAGE LOANS CLOSED[1]

Year and Month	SEASONALLY ADJUSTED				NOT SEASONALLY ADJUSTED							
						1-4 Units				5+ Units			
	Total[2]	1-4 Units	5+ Units	Non-Res.	Total	Total	FHA	VA	Conv.	Total	FHA	Conv.	Non-[3] Res.
1981													
NOV	1,890	1,520	40	330	1,820	1,430	400	290	740	40	10	30	350
DEC	2,290	1,660	170	280	2,530	1,800	600	390	810	190	0	190	540
1982													
JAN	1,590	1,150	130	350	1,430	1,030	330	240	460	150	40	110	250
FEB	1,640	1,310	140	210	1,400	1,030	370	200	460	140	70	70	230
MAR	2,380	1,800	100	430	2,090	1,570	480	240	850	90	40	50	430
APR	2,190	1,740	80	300	1,940	1,550	450	250	850	80	20	60	310
MAY	2,350	1,820	260	340	2,090	1,660	530	290	840	150	50	100	280
JUN	2,550	2,110	110	300	2,530	2,160	670	400	1,090	130	120	10	240
JUL	2,170	1,730	50	250	2,230	1,950	610	370	970	50	50	0	230
AUG	2,040	1,660	70	320	2,450	2,130	720	420	990	70	10	60	250
SEP	1,960	1,520	30	140	2,250	2,090	700	490	900	50	10	40	140
OCT	2,470	1,890	310	250	2,850	2,290	840	550	900	320	90	230	240
NOV	3,370	2,950	200	260	3,240	2,770	1,190	690	890	200	140	60	270
DEC	4,270	3,670	130	180	4,720	4,210	1,620	1,020	1,570	150	0	150	360
1983													
JAN	5,230	4,630	380	270	4,710	3,880	1,720	940	1,220	650	30	620	180
FEB	5,220	5,060	170	270	4,450	3,980	1,640	970	1,370	170	0	170	300
MAR	6,730	5,780	50	800	5,910	5,050	2,150	1,350	1,520	70	40	30	790
APR	6,850	5,520	400	350	6,080	4,740	1,890	1,130	1,770	890	0	890	400
MAY	6,250	5,140	530	660	5,590	4,740	2,030	1,150	1,560	300	10	290	550
JUN	7,160	5,800	790	520	7,120	5,950	2,150	1,310	2,490	910	600	310	260
JUL	5,650	4,830	30	410	5,810	5,450	2,110	1,280	2,060	30	10	20	330
AUG	4,780	4,360	230	640	5,730	5,000	1,760	1,170	2,070	220	30	190	510
SEP	3,850	3,190	140	590	4,470	3,660	1,260	830	1,570	220	60	160	590
OCT	3,580p	2,940p	270p	420p	4,130p	3,560p	1,050p	720p	1,760p	170p	0p	170p	400p

COMMITMENT ACTIVITY: LONG-TERM MORTGAGE LOANS

Year and Month	COMMITMENTS DURING MONTH								OUTSTANDING COMMITMENTS END OF MONTH					
	To Borrowers				From Investors				To Borrowers			From Investors		
	Total	1-4 Units	5+ Units	Non-Res.	Total	1-4 Units	5+ Units	Non-Res.	1-4 Units	5+ Units	Non-Res.	1-4 Units	5+ Units	Non-Res.
1981														
NOV	1,920	1,320	180	420	4,250	1,490	190	2,570	3,720	890	640	4,170	610	1,150
DEC	3,150	2,370	470	610	2,470	2,020	160	290	5,890	950	600	4,780	1,240	710
1982														
JAN	2,320	1,850	170	300	2,590	1,970	100	520	5,160	1,150	940	4,350	1,540	1,200
FEB	2,410	1,790	60	560	2,560	2,000	80	780	5,030	930	970	3,680	1,370	1,270
MAR	3,320	2,440	210	720	2,450	2,070	270	110	6,270	560	960	4,540	880	1,260
APR	3,630	1,830	330	1,470	4,450	2,510	300	1,640	5,950	640	1,630	5,260	730	1,600
MAY	3,380	2,070	390	920	3,460	2,130	420	910	6,460	740	1,060	5,450	1,430	1,220
JUN	2,560	2,140	130	290	2,750	2,170	140	470	6,430	630	1,040	5,560	1,090	1,230
JUL	2,020	2,070	70	560	3,880	3,000	110	770	6,440	680	1,460	6,340	1,020	1,690
AUG	3,050	2,550	240	260	3,970	3,450	260	260	7,300	850	900	6,320	1,200	980
SEP	4,240	3,970	60	210	4,870	4,360	130	380	8,030	1,100	670	7,960	1,750	840
OCT	6,740	5,050	1,010	650	4,090	2,560	1,020	510	10,850	950	770	7,830	1,590	950
NOV	7,290	5,740	490	1,060	6,010	3,990	950	1,070	13,260	1,490	910	10,011	2,250	1,160
DEC	6,110	5,230	170	710	5,330	4,170	180	980	14,680	800	840	9,400	1,180	1,040
1983														
JAN	7,030	5,950	580	580	5,140	4,250	80	810	14,370	1,240	910	8,920	1,380	1,140
FEB	6,460	5,850	240	820	6,160	4,690	630	840	15,840	1,960	1,040	8,260	2,260	1,420
MAR	7,660	6,060	1,390	210	9,130	6,560	830	740	15,450	2,190	860	9,750	2,480	1,160
APR	7,460	6,050	460	950	8,300	6,880	260	1,160	16,140	2,240	1,170	11,480	2,440	1,430
MAY	7,470	7,030	0	440	6,080	5,310	190	580	16,350	540	850	9,970	1,590	1,110
JUN	7,330	7,210	0	120	7,760	7,030	310	420	15,300	530	730	12,230	1,590	1,010
JUL	6,840	6,170	0	670	7,060	6,250	160	620	15,890	520	680	11,760	680	870
AUG	6,160	5,450	0	710	6,950	5,920	20	1,010	13,660	460	860	10,820	570	1,050
SEP	4,620	4,510	0	110	5,880	4,350	570	660	12,360	410	780	8,610	1,260	790
OCT	4,980p	4,760p	0p	230p	5,900p	5,550p	160p	190p	12,160p	3,220p	880p	9,740p	4,550p	850p

Notes: [1]All dollar amounts are in millions.

[2]Total is seasonally adjusted separately from components. Total, therefore, may not equal sum of parts.

[3]Series labeled non-residential are also inclusive of farm data.

e = Percent coverage equals outstanding commitments received from investors divided by the sum of outstanding end of month inventory and outstanding commitments issued to borrowers, all multiplied by 100.

Year and Month	OUTSTANDING END OF MONTH INVENTORY									COVERAGE*			SERVICING VOLUME		
	Total	1-4 Units				5+ Units			Non-Res.	1-4 Units	5+ Units	Non-Res.	1-4 Units	5+ Units	Non-Res.
		Total	FHA	VA	Conv.	Total	FHA	Conv.							
1981															
NOV	3,580	2,220	480	340	1,400	570	60	510	790	70	64	80	188,070	19,880	37,990
DEC	4,330	2,280	470	320	1,490	1,230	160	1,070	820	59	57	50	212,560	22,750	39,210
1982															
JAN	6,150	3,200	670	460	2,070	1,680	220	1,460	1,270	52	54	54	204,420	26,490	40,660
FEB	5,590	2,910	590	440	1,880	1,540	280	1,260	1,140	46	55	60	204,960	25,450	40,430
MAR	5,670	3,370	700	400	2,230	970	130	840	1,330	47	58	55	216,430	29,520	40,140
APR	6,350	3,230	690	480	2,060	1,230	140	1,090	1,890	58	39	45	214,400	27,670	42,660
MAY	6,210	3,370	720	510	2,140	1,650	150	1,500	1,190	55	60	54	219,330	28,800	41,230
JUN	4,580	3,270	560	560	1,950	720	180	540	590	60	81	75	224,410	27,810	40,610
JUL	7,020	3,670	870	670	2,130	1,660	190	1,470	1,690	61	44	54	215,890	25,260	39,410
AUG	6,800	3,960	960	610	2,390	1,690	190	1,500	1,150	56	47	48	236,970	28,020	40,630
SEP	8,360	4,080	1,010	660	2,410	3,240	190	3,050	1,040	66	40	49	236,860	28,660	40,870
OCT	8,390	4,390	1,050	880	2,460	2,750	180	2,570	1,250	51	43	47	240,780	28,380	41,310
NOV	9,140	5,070	1,440	1,050	2,580	2,890	400	2,490	1,180	55	51	56	240,710	29,620	42,560
DEC	8,690	6,000	1,890	1,290	2,820	1,590	220	1,370	1,100	45	49	54	251,510	32,820	44,080
1983															
JAN	11,220	6,450	2,180	1,440	2,830	3,600	470	3,130	1,170	43	29	55	245,140	42,090	41,960
FEB	12,000	7,030	2,220	1,500	3,310	3,570	470	3,100	1,400	36	41	58	248,980	41,980	42,230
MAR	11,960	7,250	2,410	1,640	3,200	3,490	480	3,010	1,220	43	44	56	248,630	41,300	44,850
APR	12,080	7,170	2,340	1,700	3,130	2,760	10	2,750	1,000	49	49	66	262,050	43,670	43,790
MAY	11,200	6,930	2,510	1,700	2,720	3,470	10	3,460	800	43	40	64	267,170	44,300	41,940
JUN	12,920	8,260	2,780	1,850	3,630	3,480	10	3,470	850	46	40	64	244,020	51,230	45,180
JUL	11,960	7,760	2,490	1,710	3,560	3,410	0	3,410	790	50	17	60	305,860	43,090	42,620
AUG	11,480	7,190	2,170	1,600	3,420	3,400	0	3,400	890	52	15	59	289,220	41,830	39,150
SEP	10,870	6,530	1,570	1,460	3,200	3,440	10	3,430	900	45	33	47	264,720	44,760	33,870
OCT	11,010p	6,600p	1,730p	1,480p	3,390p	3,440p	100p	3,340p	970p	52p	68p	46p	272,820p	44,840p	33,630p

CONSTRUCTION AND LAND LOAN ACTIVITY

Year and Month	DISBURSEMENTS DURING MONTH					CONSTRUCTION LOANS CLOSED				END OF MONTH INVENTORY				
	Total	1-4 Units	5+ Units	Non-Res.	Land Loans	Total	1-4 Units	5+ Units	Non-Res.	Total	1-4 Units	5+ Units	Non-Res.	Land Loans
1981														
NOV	190	70	40	80	40	380	110	50	220	3,960	1,000	1,030	1,930	870
DEC	180	70	40	70	70	990	590	130	270	4,240	1,020	1,120	2,100	900
1982														
JAN	90	20	20	50	40	460	50	130	280	2,430	550	570	1,280	570
FEB	110	40	20	50	70	340	60	50	230	2,540	600	640	1,300	600
MAR	90	50	10	30	50	450	90	60	330	2,520	570	570	1,150	570
APR	240	50	50	140	70	490	90	140	260	2,720	580	690	1,450	640
MAY	90	30	20	40	50	620	80	160	380	2,670	560	690	1,420	610
JUN	120	40	30	50	50	700	80	300	320	3,070	600	750	1,690	640
JUL	110	40	20	50	40	430	50	250	130	3,010	600	690	1,720	610
AUG	100	40	20	40	60	540	90	200	250	2,480	640	650	1,190	630
SEP	110	40	20	50	40	320	80	130	110	2,740	690	670	1,380	630
OCT	130	70	20	40	30	230	100	110	20	3,460	830	920	1,710	600
NOV	160	80	30	40	30	430	130	220	80	3,150	840	740	1,570	610
DEC	170	70	30	70	60	490	120	110	260	3,190	850	700	1,610	620
1983														
JAN	100	50	20	30	60	280	120	30	130	2,810	750	650	1,410	580
FEB	150	60	30	60	60	280	110	60	110	3,160	890	620	1,650	630
MAR	170	80	20	70	50	340	150	140	170	3,090	930	580	1,580	610
APR	130	50	30	70	60	290	150	610	50	2,030	610	330	1,090	680
MAY	320	160	40	120	160	470	130	80	260	7,200	2,080	1,340	4,070	1,600
JUN	430	170	60	200	120	500	130	90	280	7,400	2,120	1,080	4,200	1,580
JUL	120	60	30	50	40	180	80	30	70	2,580	810	380	1,390	660
AUG	110	70	30	30	50	200	120	20	60	2,410	790	340	1,310	650
SEP	160	70	20	70	50	440	100	60	280	3,120	950	430	1,740	650
OCT	120p	50p	20p	50p	90p	330p	80p	130p	120p	3,150p	960p	410p	1,780p	730p

Year and Month	COMMITMENTS TO BORROWERS: LAND AND CONSTRUCTION LOANS								NOTES PAYABLE			
	Issued During Month				End of Month Balances				End of Month Balances			
	Total	1-4 Units	5+ Units	Non-Res.	Total	1-4 Units	5+ Units	Non-Res.	Total	Comm. Paper	To Parent	To Others
1981												
NOV	1,050	120	520	410	6,120	750	1,770	3,600	10,570	1,650	5,270	3,920
DEC	1,920	140	1,310	470	7,480	770	2,910	3,800	10,960	1,360	5,710	4,080
1982												
JAN	2,030	160	1,400	470	5,070	650	3,620	3,800	10,760	1,200	6,150	3,440
FEB	680	60	190	430	7,530	840	5,140	3,650	10,910	1,260	5,700	3,950
MAR	890	170	160	560	6,420	630	2,030	3,790	11,790	1,330	7,030	3,430
APR	2,720	100	1,090	1,530	7,520	560	2,130	4,930	12,270	1,070	5,900	5,300
MAY	1,270	130	670	470	5,150	660	3,230	4,260	11,020	1,220	5,400	4,420
JUN	930	110	300	520	7,660	590	2,250	4,820	13,760	1,310	6,050	6,400
JUL	940	60	330	550	5,900	560	2,250	6,070	11,210	1,930	5,320	3,960
AUG	750	100	350	300	4,420	690	1,570	2,160	12,080	1,740	5,440	5,500
SEP	660	90	430	140	6,150	980	2,780	2,470	12,130	2,080	6,130	3,960
OCT	2,370	110	2,000	260	7,180	660	3,630	2,890	16,330	1,460	7,870	9,000
NOV	1,370	190	880	300	7,810	560	4,040	2,910	12,720	1,910	5,850	4,960
DEC	1,050	160	500	390	5,500	850	2,220	2,730	14,060	2,740	6,950	4,370
1983												
JAN	1,730	100	1,420	210	7,170	660	3,990	2,520	19,270	1,320	10,210	7,680
FEB	1,020	130	420	470	8,830	810	4,870	3,460	20,070	3,830	8,370	8,170
MAR	2,840	240	2,260	340	9,400	1,010	5,810	2,580	20,640	3,460	10,510	7,170
APR	1,850	140	500	710	8,830	960	4,900	2,920	20,120	1,330	11,200	7,590
MAY	1,070	120	610	340	6,250	650	3,900	1,730	28,960	1,780	16,460	11,400
JUN	1,410	160	550	700	6,250	970	3,730	2,100	36,620	4,440	10,370	21,960
JUL	1,970	120	1,760	70	7,160	910	4,660	1,590	36,150	4,430	14,000	17,640
AUG	900	150	100	620	5,620	840	2,480	2,200	38,320	5,920	19,920	12,530
SEP	1,300	100	690	510	5,230	570	2,190	2,150	41,830	3,110	9,860	28,870
OCT	1,510p	120p	530p	860p	10,460p	900p	7,060p	2,500p	43,780p	2,780p	9,230p	31,770p